August 2001
Volume 69 No 8

Amateur Radio

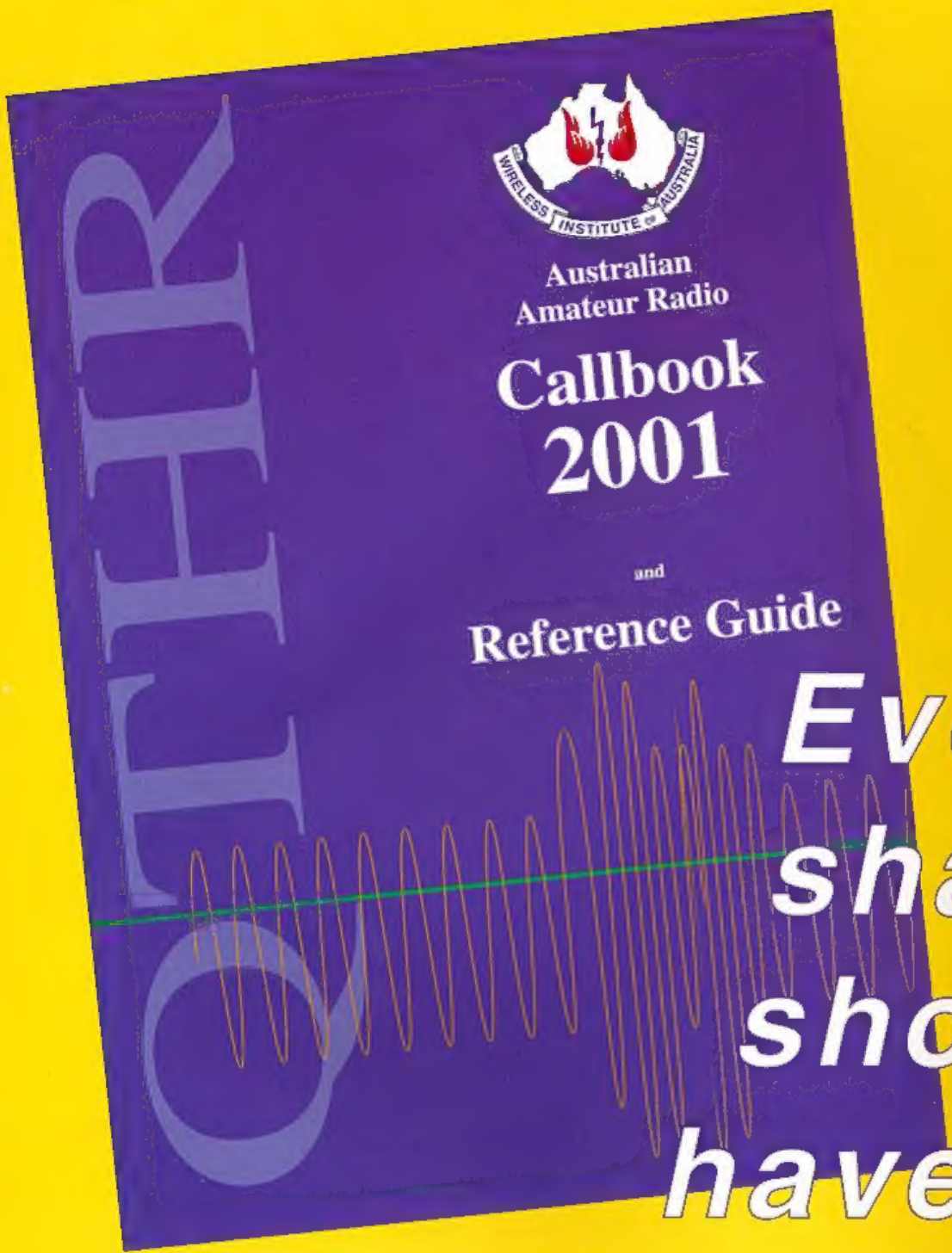
Remembrance Day Contest

International Lighthouse/Lightship Weekend

Internet Repeater Linking

- A 10 MHz Reference Oscillator
- Noise Blanking for the High Q LF Loop Antenna
- Review of the Prosistel 2051B

Technical Abstracts: • RFI Tracker • Grounding



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Amateur Radio

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Our cover this month

Focusing on the present and future for Remembrance Day: SIG Julie Meredith and CPL Cristian Birzer (kneeling), members of 144 Signal Squadron. Photographs from Captain Sandra Turner of 9th Brigade, the Army Reserve Unit in SA and Tasmania, taken by Pte Kathryn Thomas.

Contributions to Amateur Radio
Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news Manuscripts with drawings and or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, How to write for Amateur Radio is available from the Federal Office on receipt of a stamped self-addressed envelope.

Back Issues
Back issues are available directly from the WIA Federal Office (until stocks are exhausted), at $4.00 each (including postage within Australia) to members.

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When back issues are no longer available, photocopies of articles are available to members at $2.50 each (plus an additional $2 for each additional issue in which the article appears).

Disclaimer
The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

Amateur Radio Service

A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

Editorial Comment

Colwyn Low VK5UE

Getting it right!

Well I seem to more often than not get things just a bit wrong with this magazine. The July cover had to be redone and changed at the last moment. The proof cover was far too grainy to publish. You will have read the notes on photograph requirements in the July issue. Please send either hard copy original prints or digital picture with at least 300dpi. There are also a few SKs, which have appeared more than once, and I apologise for any hurt this has caused. These entries will be entered from an editor's database in future.

This month we say good bye to two regular columnists John Kelleher VK3DP who has provide the AWARDS column for 10 years and Peter Parker's Novice Notes. We will have other input from Peter, but we now need a Novice Columnist. John has not been in the best of health recently so in addition to our thanks we hope he can enjoy better health and do a few of the things that give him pleasure We will miss you John. Hands up now for a new Awards Officer.

I am pleased to announce that Ian Godsil VK3VP is again Federal Contest Co-ordinator. Congratulations Ian.

We have a different RD Contest cover subject this year. Remembering the past while acknowledging the present. August will see both the RD and the ALARA contests. These are significant Australian Amateur Radio events please support them.

The public face of Amateur Radio needs to be continually spruced up and presented to the public for at least two reasons. 1. To let people know who we are and what we do and 2. That we do provide a community service in times of emergency and disaster. If this is more widely known and recognised in the community we may find it easier to justify our access to the RF Spectrum.

There are several areas where we could do just a little more and make a much greater impact. For example at the Coopers Adelaide Rally scoring details were handled by WICEN, each operator could display a 600 by 1000 mm sign with the WICEN logo and underneath Radio Operator. However 'Does everyone know that Wireless Institute is the Amateur Radio Organisation?' I feel we need some further sign that say 'Radio Amateurs assisting the Community – Ask the operator for more information in a quiet moment'. Think about it.

Further this month sees the International Lighthouse–Lightship Weekend. This is an opportunity to have some time out and work from a 'Different' location. If you stay home you can share in the activation by providing some contacts and if you are into collecting QSL cards some very interesting ones will be on offer.

The RD and ALARA contests take place this month. Both are more about contacting old friends and making new ones rather than squash all to win contests. How about working 10 contacts in each for starters and some more if you feel like it.

The editor recently got out in the early mornings to work with WICEN (Ran out of petrol on the way home. Even Historic VW Beetles need more petrol than one fill up between February and July). Keith VK5OQ has given me a circuit to get 200mW at 1296MHz so I will have to get back to SMT.

Have a great operating and constructing August.

Colwyn, VK5UE

Silent Keys

The WIA regrets to announce the recent passing of:-

E MARSTELLA VK2AEZ
R M C (Ronald) STUART VK2ASJ
C H UTBER VK3AHU
J H (John) WARREN VK3DKD
S A BRUNETTE VK3IS
C R ALLEN VK6ACR

WIA Comment

Ernest Hocking VK1LK

Meeting the Members

Last month I went to Parramatta for the VK2 conference of clubs. The agenda included several business items, most notably increased charges for access to State Government owned property for the operation of repeaters. VK2 has assembled a team to approach the various State organisations to see if a more sensible arrangement can be arrived at in light of the importance of these sites to WICEN and similar activities. Following the discussions two talks were given. One by Peter Illmayer VK2YX on Internet Radio Linking Project and the other Steven Pall VK2PS on the future of amateur radio. Both identified the importance of membership to the future success of amateur radio. One, through the involvement in technically exciting areas such as that surrounding the use of the Internet to enhance amateur radio, and the other through a more active involvement in the local community. Both approaches have their merits, although I suspect that we need to encompass both approaches if we are to attract the widest range of potential members.

Also discussed were reports of the use of the Olympic Radio Network recently. The VK3 Division first brought this to my attention and has now been confirmed by the VK2 division. On my return to Canberra I approached the ACA to see how they wished to approach the matter. After a few days I was informed that the use of the system had stopped. It appears that an engineer at the site had inadvertently switched the equipment on. I was very pleased to see the way in which the WIA and ACA worked together on the solution of this problem. Each has a role to play in reporting and dealing with such incidents.

Work recently took me to Adelaide. Although a short visit, I was able to meet with the members of the S.A. UHF Group/Elizabeth Amateur Radio Club. Thanks to everyone who made me welcome and allowing me to discuss how we can improve amateur radio. I always welcome the opportunity to meet and listen to fellow amateurs. Hopefully I will get more opportunities.

Federal Executive Business

The month much other important business has been conducted. I can report that David Pilley has been working hard on the issue of budgets. It is a fact that with our current membership funds are tight. The simplest way out of this situation is to recruit more amateurs and persuade them to become members of the Institute. This will take some time so David has taken on the job of determining what we can and cannot afford to do.

Brenda and her team have completed work on the WIA response to the ACA examinations discussion paper. This has now been submitted and we await the issue of the Request for Tender. I have made it clear to the ACA that the WIA is very keen to take up the full responsibility for administering the amateur examinations. Don Wilchefski has been hard at work filling gaps in the current Federal coordinator portfolio. If anyone has the time to devote to such activities I am sure that Don would be delighted to hear from you. By the time you read this I hope that Ian Godsil has been re-elected to the position of Federal Contest Coordinator. I hope to confirm an appointment to the position of Intruder Watch coordinator by the next issue of AR.

Other Matters

Recently Barry White has put forward a motion from VK2 for the WIA to investigate the role of a foundation licence in attracting new members to the hobby. You can visit the web site for a copy of the paper or speak to your local Divisional Councillor. This action is a natural sequel to the motion passed at Convention regarding the investigation of an entry level license. It would need to be carefully planned. This matter was recently discussed informally with the ACA at a meeting attended by Gilbert Hughes of VK1 and I. I can report that these initial discussions suggest that the ACA are not averse to the consideration of this matter as part of an overall license rationalisation exercise. The full report on this meeting will be published separately.

One matter does need everyone's immediate attention. This is license fee increases. The recently released ACA price schedule has identified a one dollar increase in the amateur license. It should be pointed out that this increase is the first since 1995. This is significant since the ACA went to some trouble during the recent introduction of the GST to absorb any cost increase. I would ask all members to accept this increase in light of the length of time that the previous fees have been in place. The ACA liaison committee will be dealing with the matter of license fees over the next year in time for the next ACA price review. We already know that other overseas administrations have taken radical measures with their pricing. We need to assess these and make a suitable proposal to the ACA.

In terms of work with the ACA I can report that the first meeting of the new format International Radiocommunications Advisory Committee (IRAC) has been scheduled for 30 August. I will be discussing the agenda items with the various WIA representatives over the next few weeks in order to be prepared for the meeting.

This will be a great opportunity to ensure that the interests of the amateur community are represented at a national forum.

The number of letters, emails, and phone calls to me continues to increase. I am grateful to everyone who as taken the time to put their thoughts to paper. Most correspondence relates to ways in which the WIA can improve the way that it works. Many people also offer their time to assist. I am heartened by the passion that so many people have for the hobby. Please keep the correspondence coming. It is the only way that the WIA executive can get to know the concerns you have.

■r

Noise Blanking for the High Q LF Loop Antenna

Lloyd Butler VK5BR
16 Ottawa Avenue
Panorama SA 5041

A high Q tuned loop has many desirable features for LF reception including the reduction of localised noise. However the high Q prevents operation of the usual receiver noise blanker. The article describes how noise blanking can be achieved by using an auxiliary antenna in conjunction with the loop.

The advantages of using the tuned loop antenna for LF reception have been described in previous articles. The signal level induced into the loop is quite low and to ensure that this level is well above the inherent noise level of the following interface amplifier, it is desirable to use a loop which has high Q to achieve a high voltage multiplication within the loop tuned circuit. There are also a number of other advantages in raising the Q such as improving rejection of strong adjacent signals, which might cause cross modulation in the following mixer. However, this high Q inhibits operation of the normal noise blanker installed in most receivers. Noise blankers work on impulse type noise and the aim of the system described is to provide a means to blank out this type of noise whilst still taking advantage of the feature of high Q within the loop.

In previous articles, I described a loop converter (Reference 1) and a noise cancelling unit (Reference 2). These operated from an auxiliary antenna to provide a cancelling signal, which was mixed with the output from the loop antenna. In the following text I describe a further blanking unit, which is fed from the same auxiliary antenna and the same noise cancelling unit, but in this case the latter operates as a tuning and gain controlled interface unit.

The System

Figure 1 shows how the system is connected up. The auxiliary antenna is connected to the noise cancelling unit, which controls phase and amplitude for adjusting noise cancellation. The output of this unit is fed via a switch in the blanking unit and, with the switch selected for noise cancelling, the output is fed to the loop converter for mixing with the loop signal. For this switch connection, the system operates as described in Reference 2.

With the switch selected for noise blanking, the noise cancelling unit output is fed into the blanking detector. In this operation, the phase control is

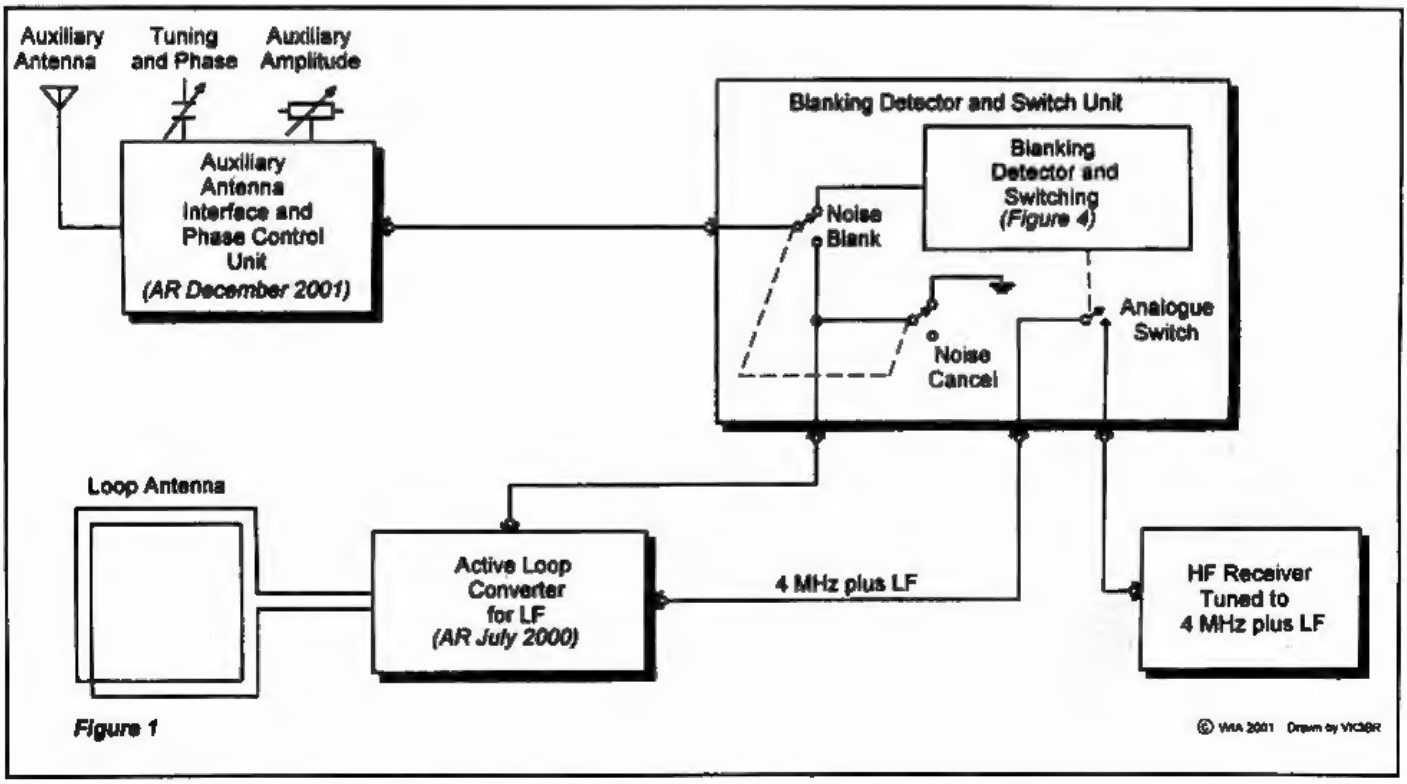

Figure 1. Active loop converter set-up with noise cancelling and noise blanking arrangement

simply a tuning control and the amplitude control sets the level into the blanking detector. When triggered, the blanking detector operates a CMOS bilateral analogue switch, which opens the 4 MHz loop converter output to the host HF receiver for a defined preset period.

The noise cancelling and noise blanking units are in separate metal boxes to the loop converter and the three are interconnected via BNC connector ended cords. The arrangement is how the experimental system evolved. I initially built the LF Converter with regeneration for Q control. I later thought I would try noise cancelling and later again the blanking system.

Impulse Noise and Blanking

I t is interesting to observe with a CRO what happens across a tuned circuit when it is energised by a short impulse. The tuned circuit is triggered into oscillation and a damped wave train is generated with each cycle decreasing in amplitude to that of the previous one. The higher the Q of the tuned circuit, the longer it takes to dissipate the energy and the longer it takes for the amplitude to fall to a given low level.

A formula derived from information in the Admiralty Handbook gives N as follows:

N=1+0.73Q

where N = No of cycles for amplitude to fall to 10% of initial value, and Q = Circuit Q

A sample frequency of 200 kHz is the lowest frequency for aeronautical non-directional beacons and is close to the New Zealand amateur band of 165 to 190 kHz. The period of one cycle at 200 kHz is five microseconds. Selecting this frequency and using the above formula, Fig 2 is evolved plotting time for the damped wave train to fall to 10% of its initial value verses circuit Q.

Take a good typical loop, which has a Q of 200. It can be seen from the curve that for this loop, it will take more than 735 microseconds for a triggered wave to fall to a negligible value. If the effect of the impulse is to be eliminated, the received signal will have to be switched off (or blanked out) on the first cycle and remain off for a period not less than 735 microseconds.

Now let's turn to the question of how the start of blanking is initiated and how the impulse is selectively detected. The blanking system normally relies on the fact that the impulse is of higher amplitude than the signal and is of very short duration so that the blanking is triggered by this short pulse. If there is a tuned circuit in the triggering path and the Q is low, triggering occurs on the first cycle of the damped wave train generated and the second and subsequent cycles fall away rapidly in amplitude so that they don't confuse the triggering circuit.

However, if the Q is high, the change in amplitude from cycle to cycle is very small as the decay of amplitude with time is stretched. Detecting this to operate the blanking trigger produces a stretched version of the original impulse, which is unsuitable for edge triggering of the blanking switch. So, to get over this problem with the high Q loop, we feed the blanking trigger from an auxiliary wire antenna via low Q tuning. We could also use an untuned noise pick-up but some form of selective tuning or bandpass filter is needed, at least in the City, to stop false triggering of the blanking circuit by strong local broadcast stations and aeronautical beacons.

As it turns out, the tuning system in the unit already built for noise cancelling has quite low Q and I was able to put the unit to use, without modification, as the auxiliary antenna interface for the blanking unit.

An interesting point is that this problem of the noise blanking system not working with the high Q loop is a characteristic of the low frequency band. As already discussed, for a Q of 200 at 200 kHz, the decay period of the impulse triggered damped wave falls to 10% of its initial value in 735 microseconds. However, for a Q of 200 at 2 MHz, the decay period is only 73.5 microseconds and is possibly short enough to work the normal blanking circuit.

To demonstrate this theory, I tested another loop antenna, which I had made for 1.8 MHz, on two different HF transceivers with blanking fitted. The loop has a Q of around 100 and, based on the above calculations, would have a decay period to 10% in 41 microseconds. The blanking worked quite successfully on impulse noise with impulse repetition frequencies of 50 and 100 Hz. Operation failed for higher repetition frequencies, but the blanking circuits were probably only designed to cope with power line interference at the lower frequencies. Using the same transceivers converted up from 200 kHz with my LF loop set to a similar Q, there was no way in which blanking would work.

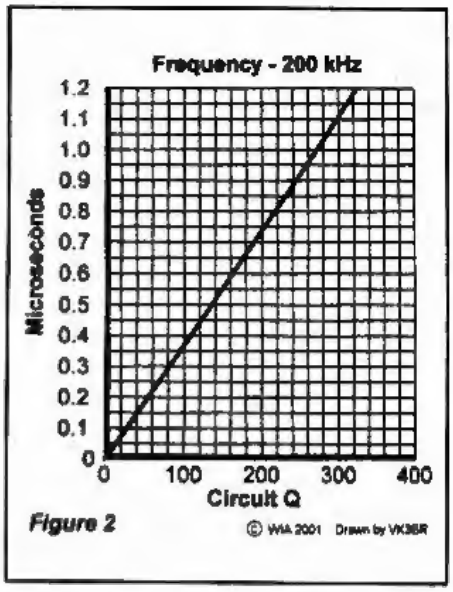

Figure 2. Tuned circuit triggered by impulse. A plot of the decay time for damped waveform amplitude to fall to 10% of its initial value versus circuit Q.

The Blanking Unit

Fig 3 is a block diagram of the blanking unit. Circuit detail is shown in Fig 4 and operation is as follows:

Noise signal from the auxiliary antenna interface unit is amplified by the two stage amplifier N1, a twin JFET operational amplifier package type LF353. The output of N1 is coupled to Schmitt trigger N2 via full wave rectifier circuit L1, D1, D2. The idea of the full wave circuit is to ensure that the leading edge of the first half cycle of the impulse initiated wave train triggers N2 independently of whether the first half is positive or negative. N2 (74LS14) is a TTL type of trigger requiring a five volt rail and this is derived from the zener diode circuit ZD1, R13. The five volts is also used to set the operating points of amplifiers N1. I could have used a CMOS type trigger here with the 12 V rail, but I didn't have one and I did have the 74LS14 on the shelf. There are six individual Schmitt trigger gates in the N2 package and, of course, five are spare.

The rectified output of D1-D2

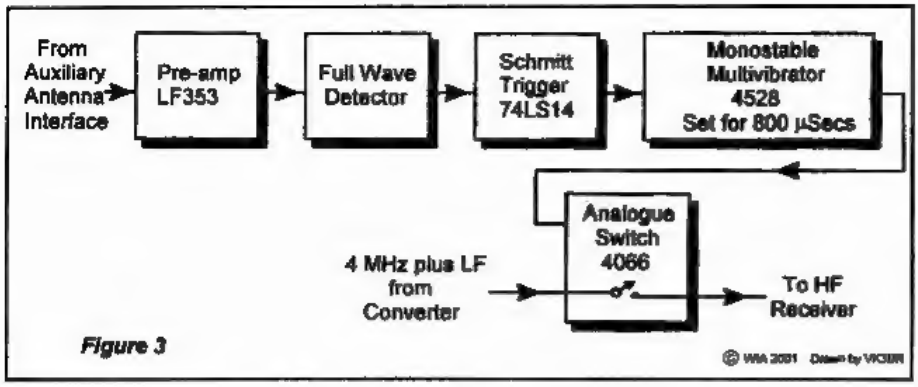

Figure 3. Blanking unit block diagram.

produces negative going pulses and N2 bias is set by trimpot RV1 so that N2 is triggered on by the negative going signal. I found it operated nicely at 1.8 V of bias.

When triggered, N2 produces a 5 V step which is differentiated by C5, R8-R9 and the spike flips the mono-stable multi-vibrator N3 (type 4528) to an 'on' state where it remains for a period determined by the values of R10 and C8. Because the output of N2 is only 5 V, the setting of reference voltage at pin four of N3 is fairly critical and this reference is set by the ratio of the values of R8 and R9.

Of course, the 'on' time of the multi-vibrator sets the blanking period and I experimented with this quite a bit. For very high loop Q, the blanking period can be advanced to around 800 microseconds. Advancing beyond this deteriorates the tonal quality of the detected audio signal as heard in the receiver. Referring to the 10% level curve of Fig 2, this equates to a Q of 220. In the loop converter used, I can apply regeneration and increase the effective Q to quite a high value. In practice, using 800 microseconds, I found that I could advance the regeneration control somewhat and achieve blanking on what would appear to be much higher values of Q. An explanation of this might be that most of the noise power is concentrated in the earlier part of the damped wave train and that is the most effective part to cut out by blanking.

The blanking period is easily altered by changing the value of C8. A blanking period of up to 800 microseconds (C8 = 10 nf) can be used for impulse repetition frequencies below 200 Hz such as the usual 50 and 100 Hz power line noise. Logically, the blanking period must be less than the impulse repetition period and must be reduced for higher impulse repetition frequencies. For impulse repetition frequencies up to 1000 Hz, a blanking period of 200 microseconds (C8 = 2.2 nf) can be used with the maximum loop Q then a little lower. As a compromise, I settled on 400 microseconds with C8 = 4.7 nF

Whilst most repetitive impulse interference in Australia probably initiates from the 50 Hz power mains, I mentioned higher repetition frequencies in the light of 600 Hz interference being reported in New Zealand due to DC to AC conversion in their power distribution system.

Switching out or blanking of the received RF signal is done by CMOS bilateral analogue switch package N4, type 4066 which contains four individual switch units. One is operated by the inverted (Q bar) output of N3. The normal condition is that this output is high and the switch in series with the RF circuit is closed. During blanking, the output of N3 goes low and the RF circuit is opened.

To help in reducing stray coupling across the opened series switch, two of the other switches are connected in parallel, one at the input to the series switch and one at its output. These are driven from the non-inverting (Q) output of N3 so that they are normally open when the series switch is closed, and closed when the series switch is open. The switches have a finite closed resistance of around 50 - 100 ohms and hence, as shunt units, they are not as effective as the series opening switch. However, as they are in the package, they might as well be used to provide a little extra attenuation during the blanking period.

The load current for the system from a 12 volt DC supply is as follows:

LF Converter	12.5 mA
Noise Cancelling Unit	6 mA
Noise Blanking unit	37 mA

The higher current in the Noise Blanking Unit is mainly due to the 5 V Zener diode regulator. Of course, this current could be reduced considerably by replacing the Zener with a small 5 V series regulator,

Operation of the System

As this article is meant to concentrate on the noise blanking section of the system, I don't intend to discuss in much detail the operation of the converter or the noise cancelling section of the system. These were previously described more fully in References 1 and 2.

In attempting to use either noise blanking or noise cancelling, it is important to check whether the noise to be reduced is also being received on the auxiliary antenna, otherwise neither system will work. To do this, the gain control for the loop is turned right down; the noise cancelling/noise blanking switch is selected to cancelling and the gain control in the noise cancelling unit is advanced. The tuning (cum phase control) in the noise cancelling unit is then peaked for maximum signal. After this is done, the loop gain control is restored to its maximum setting.

For noise cancelling, the phase switch, phase control and gain control in the noise cancelling unit are adjusted for minimum noise as described in Reference 2.

For noise blanking on impulse type noise, the gain control in the noise cancelling unit is turned right down and the noise cancelling/noise blanking switch is set to blanking. The gain control in the noise cancelling unit now becomes the blanking threshold control and is slowly advanced until the noise is reduced or ceases. Just past this point is likely to be the best setting; advancing too far might increase noise, or even blank the received signal right out by continuous triggering of the blanking switch.

One characteristic of the system might worry the operator when the loop gain control is turned right down with the blanking circuit still being triggered. With the signal removed, the AGC in the host receiver raises the receiver sensitivity to its most sensitive state and some noise pick-up from the blanking

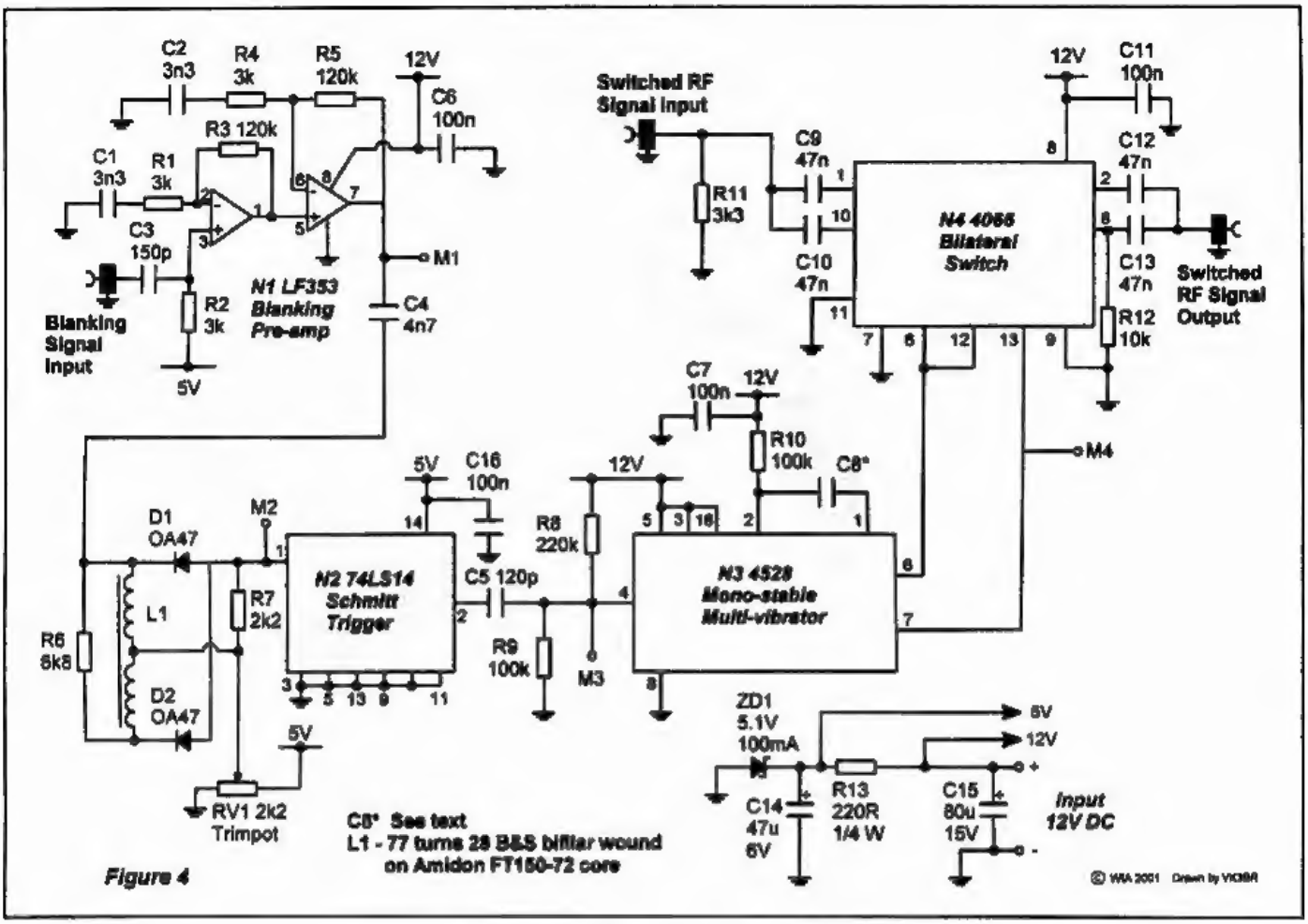

Figure 4. Blanking unit circuit diagram.

switching is apparent. This is well below the normal signal level and is essentially suppressed by the AGC when the loop gain control is advanced.

Testing the noise blanking system during experimentation can be a challenge if there is no impulse noise being received to make the tests. I found the easiest way to generate some noise for testing was to feed a square wave generator into a third antenna wire on the site and select a square wave frequency equal to the required impulse repetition frequency (say 100 Hz to simulate noise from power mains). To observe the waveforms in the blanking system with a CRO, simply synchronise the CRO time-base to the square wave.

In Conclusion

The high Q loop antenna has many advantages for use at LF frequencies, but the high Q can prevent the usual type of noise blanker from operating in the receiver. The article shows how noise blanking can still be achieved by using an auxiliary antenna with low Q tuning to feed the blanking circuit.

A blanking unit is described which is combined with a loop operated LF-to-HF frequency converter and a noise cancelling unit, both previously described in *Amateur Radio* magazine.

The combined system gives a choice of different ways to reduce noise interference and improve the general signal to noise ratio. Which way works best can depend on the nature of the noise. The various options include the following:

- Choice of loop antenna or long wire on its own, whichever works best.
- Use of the loop to make use of its directional properties and its insensitivity to localised electric field noise.
- Means to increase the Q of the loop antenna above its natural Q to limit the bandwidth of broadband noise and further restrict strong adjacent unwanted signal from causing intermodulation interference within the mixer stage.
- Use of the loop in conjunction with the auxiliary wire antenna to phase out unwanted noise or an unwanted other signal coming from a different direction.
- Use of the wire antenna as a noise reference to blank out impulse type noise, which might cause interference in the loop antenna.

References

1. *An Active Loop Converter for the LF Bands* - Lloyd Butler VK5BR. Amateur Radio, July 2000
2. *Antenna Noise & Signal Cancelling at LF* - Lloyd Butler VK5BR. Amateur Radio, December 2000.

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A 10 MHz Reference Oscillator

Keith Gooley VK5OQ

A quartz crystal oscillator in a temperature stabilised enclosure to be used as a reference for a counter or narrow-band mode receiver or transmitter at UHF/SHF

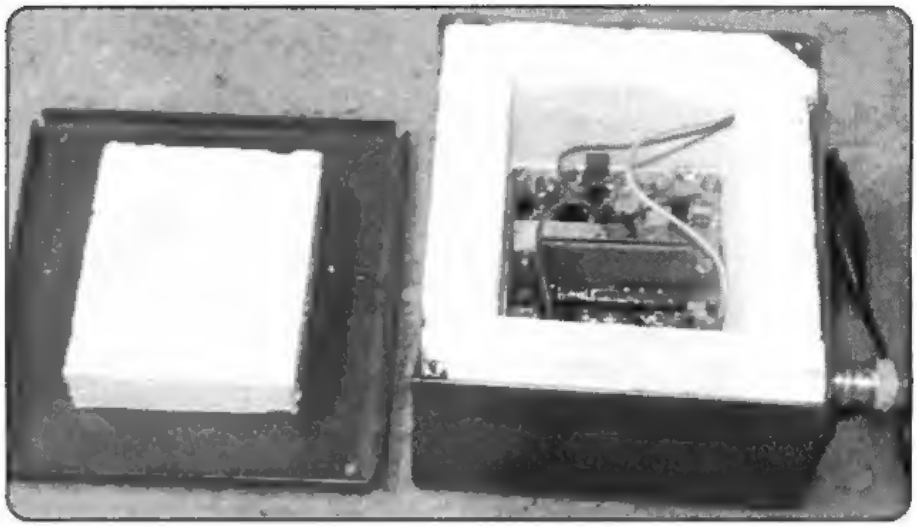

Photo 1

The need for this reference arose in my shack when I was using a 1 GHz counter to measure frequencies in the 450 MHz region and finding errors of the order of 3 kHz. This is not that much, as a percentage but even for FM, it is a significant part of the bandwidth of a narrow-band FM signal. As the frequency is increased, the requirements on the stability and accuracy of a reference become more demanding. The original reference in the counter was a simple microprocessor crystal in a CMOS type oscillator. It was calibrated some years ago but had obviously drifted off. So the idea for this more stable reference was born. The ultimate aim is to lock its frequency to the horizontal sync pulses of a TV signal along the lines of Ref 1. The TV networks use accurate standards to generate their sync pulses. The ABC derives its reference from Global Positioning System signals.

Design

There are two main causes of drift in the frequency of quartz crystal oscillators, namely temperature changes and aging of the crystal itself. To make a high stability oscillator therefore requires that both these causes of drift be compensated for. Putting the crystal and often, its associated oscillator components in a temperature-stabilised oven has long been a means of reducing or removing the effects of temperature. There is not much the average amateur can do about aging of the crystal other than obtaining the best quality crystal

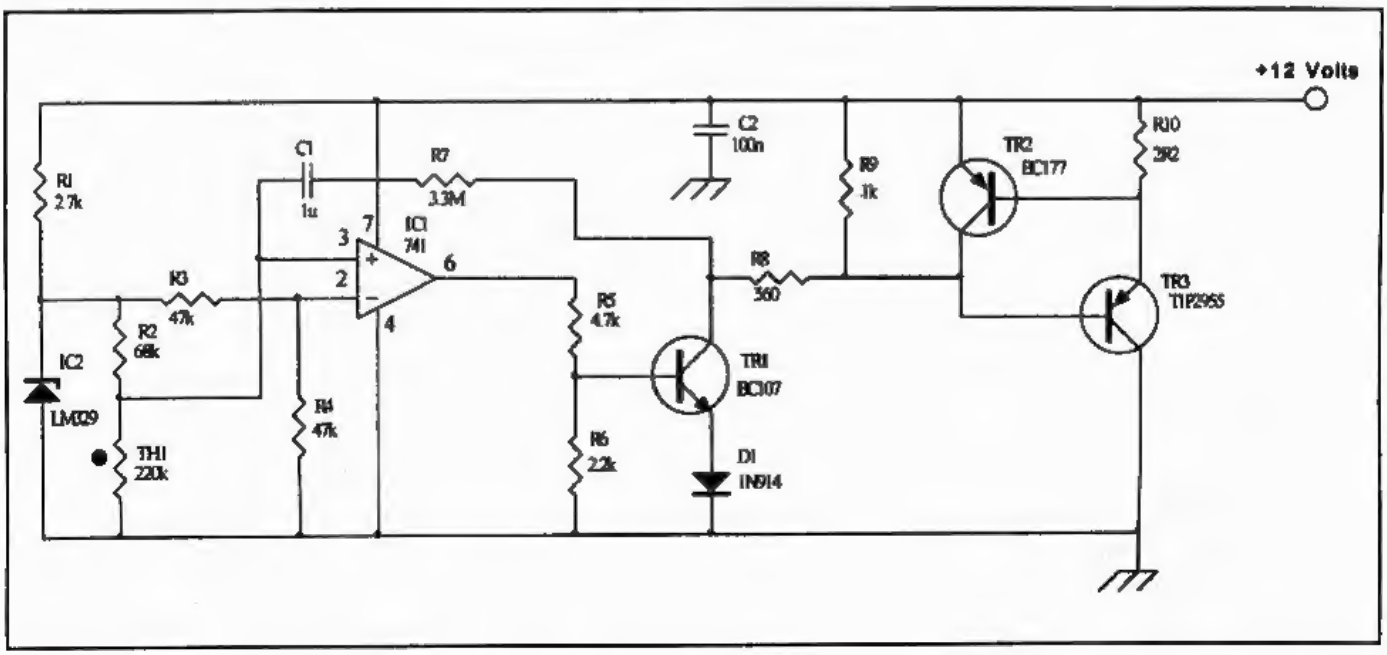

Figure 1. Oven Controller

that can be afforded given the requirements of the application.

More recent reference oscillator designs use a temperature sensor such as a thermistor and adjust the frequency of the oscillator based on the sensor output This may be done by directly coupling the thermistor to a varicap or if more accuracy is required a microprocessor may be used. The temperature reading is brought into the micro via an A-D converter and a lookup table used to determine the output voltage required on a varicap to correct the frequency. The digital representation of the output voltage is then applied to a D-A converter and then to the varicap. This latter method can be made very accurate as the table of values in the micro can be tailored to the particular crystal.

These two methods of compensating for temperature changes generally result in very low power consumption for the oscillator and its compensation and therefore are well suited to modern battery operated equipment. However, they are not easy for an amateur to reproduce, building a one off reference. Therefore I have chosen to take the old "tried and true" method of putting the whole oscillator and buffer in a temperature stabilised enclosure with good insulation to minimise the power consumption of the heater once the internal temperature has stabilised.

I tackled the design and building of the oven controller first as I reasoned that if I couldn't get that right, there was no point continuing. As it turned out, the controller works very well to the point that temperature variations at the thermistor are difficult to determine, certainly less than 0.1 degree C. Temperature variations at the thermistor are one thing but the secret is to make the thermal coupling between the heater, the thermistor and the crystal as tight as possible. The heater is a PNP power transistor in a large TO-218 tab package screwed to a copper heat spreader The thermistor is soldered to a lug under the transistor fixing screw, making good thermal contact The crystal is clamped to the heat spreader alongside the heater transistor The layout is illustrated in the photographs The heat spreader is a 60 mm length of 25 by 3 mm copper bus bar

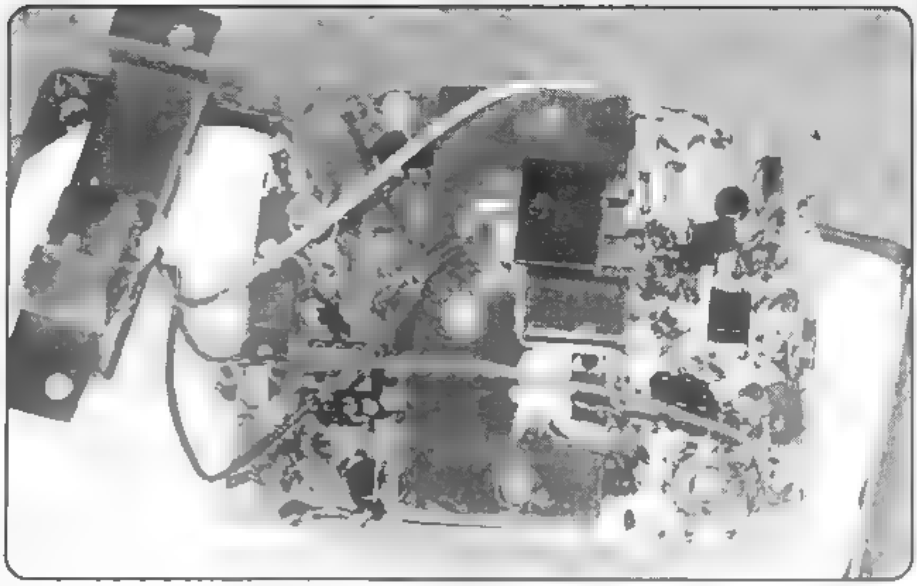

Photo 2

Circuit Description - Oven Controller

Refer to Fig 1, the oven controller circuit. This circuit is a feedback control system in which the temperature is sensed by a thermistor and any error between it and a reference is amplified and used to control the heater. IC2 is a precision voltage reference of 6.9 volts, providing a precise supply for the resistance bridge R2, R3, R4 and the thermistor, TH1. The latter has a resistance of about 220 k at 25 deg and 68 k at 60 deg. Any imbalance in the bridge is applied to the op amp IC1 which amplifies it and passes a correction voltage to the heater driver transistor, TR1 If the temperature is too low, TH1 is higher than R2 and the plus input to the opamp, pin 3, goes positive causing the output to rise. This results in TR1 drawing more current, which flows out of the base of TR3. TR3's emitter current rises until the voltage across R10 causes TR2 to turn on. This shunts current away from TR3 base, limiting the emitter current to about 300 mA. This configuration of a current limiting transistor (TR2) in the base circuit of another to protect the latter from excess current is a very useful one, which can be quite widely applied. In fact it is commonly used in the output circuits of IC's, both digital and analogue

TR3 dissipates about 3.5 watts when hard on and heats up the oscillator components and the thermistor. The thermistor voltage falls lowering the correction voltage into the opamp which reduces the current in TR1 and therefore TR3 The diode D1 ensures that when the opamp output is at its lower limit which is about one volt, TR1 remains off since two diode voltage drops (1.3 volts) are required to turn TR1 on.

The components C1 and R7 are for frequency compensation of the control loop. Without them the loop is unstable with hum and noise picked up on the opamp input causing large amplitude oscillations at the opamp output In addition, the loop tends to "hunt" with the heater going from hard on to hard off. The resulting temperature fluctuations cause the oscillator frequency to fluctuate as well, after all, the idea of the oven controller is to keep the temperature constant within as close limits as possible. Close thermal coupling between the thermistor and the heater transistor makes stabilising of the control loop easier. I found that placing the thermistor on the heat spreader 15 mm away from the transistor fixing screw resulted in a thermal delay which was difficult to compensate for. The drill hole where the thermistor was placed initially can be seen in photo 2. As it is, the compensation is close to ideal with only a little overshoot of temperature during warm-up

10 MHz Oscillator

The oscillator circuit, Fig 2 shows the details of the Colpitts crystal oscillator and buffer amplifier This is a version of the Colpitts oscillator using a darlington

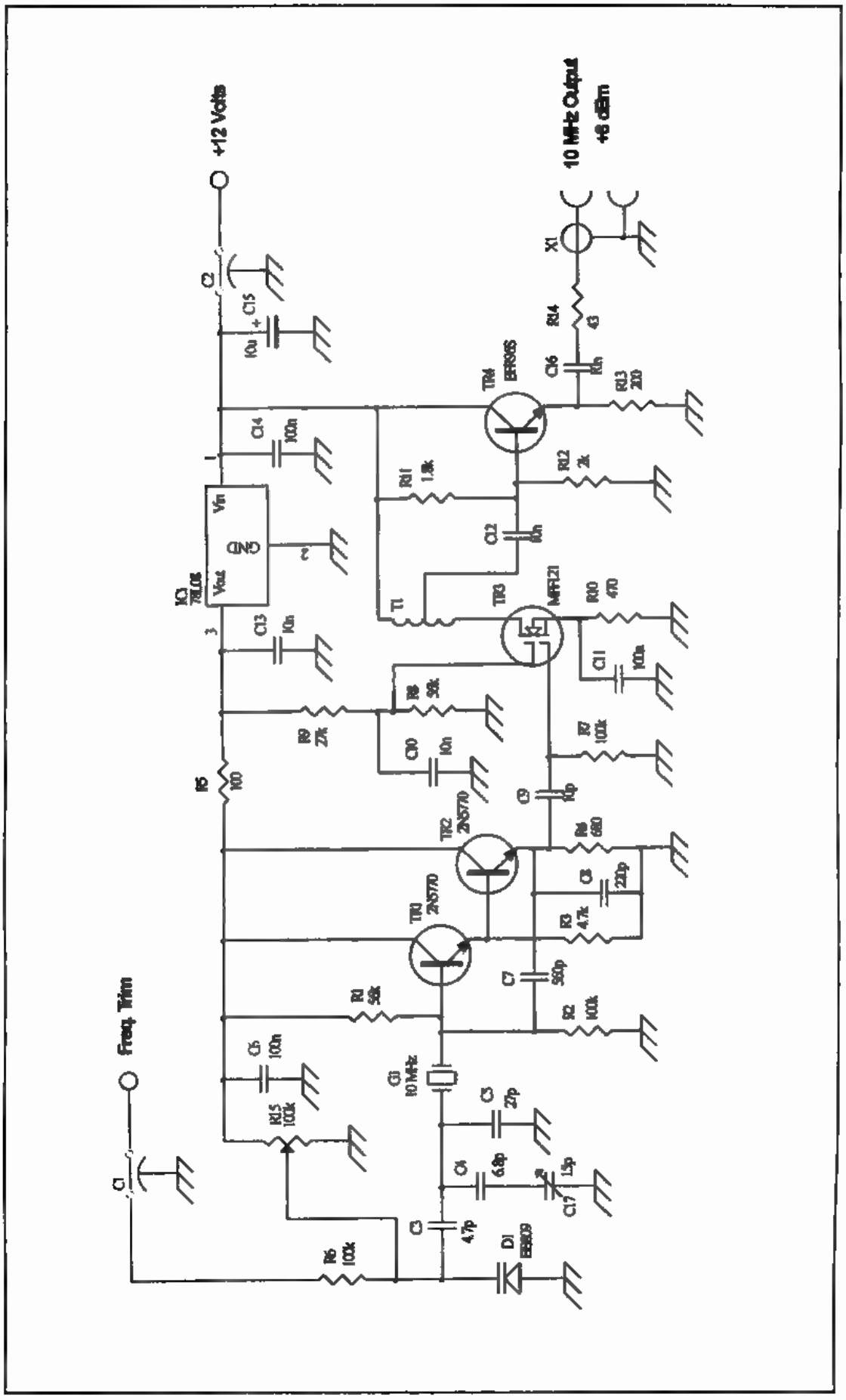

Figure 2. 10MHzReference Oscillator

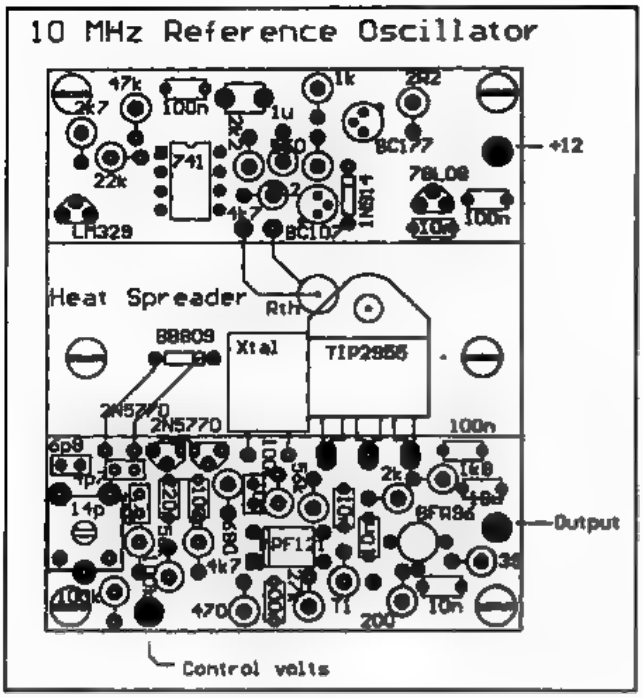

Figure 3

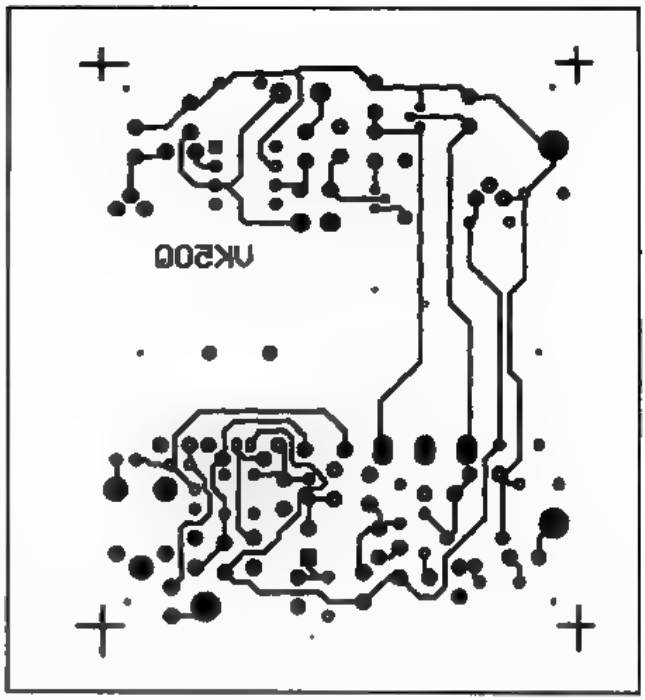

Figure 5

connection of two transistors, TR1 and TR2. I have used it in the past and found it to be more reliable than the single transistor version. The crystal is on its parallel resonance frequency and the frequency can be adjusted by changing the capacitance seen by the crystal. Both electrical and mechanical adjustments are provided for by a varicap and a good quality air dielectric trimmer. With the trimpot R15 set at about the centre of its range, varying the frequency tuning voltage from zero to 5 volts causes the oscillator frequency to increase by about 3 Hz.

The high gain of the darlington connected transistors enables larger values of feedback capacitors C7 and C8 to be used. This provides improved isolation of the crystal from variations in transistor parameters. Transistor parameter variation due to temperature is minimised by clamping the two oscillator transistors to the heat spreader alongside the crystal. Likewise the varicap is placed in thermal contact with the heat spreader. I put thermal grease on all the mating surfaces to help keep the temperature more uniform.

The oscillator output is lightly

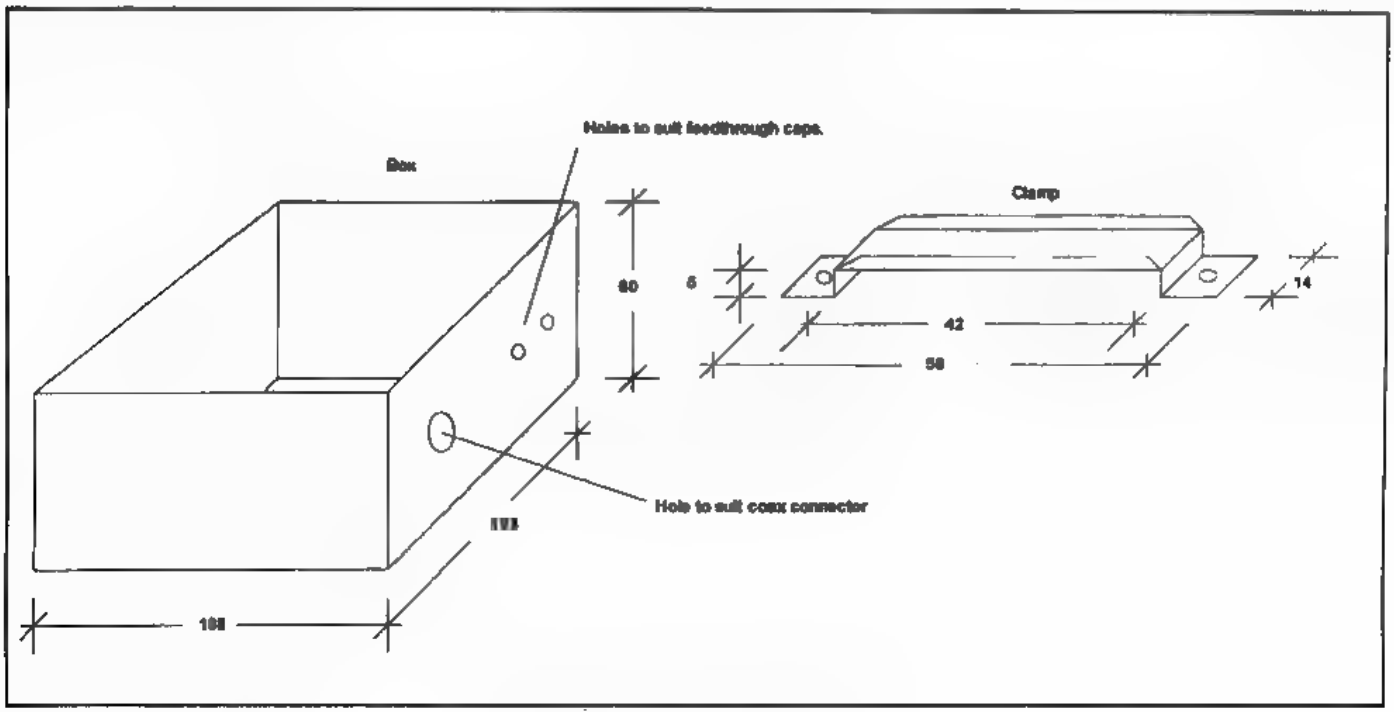

Figure 4. Box and Clamp dimensions

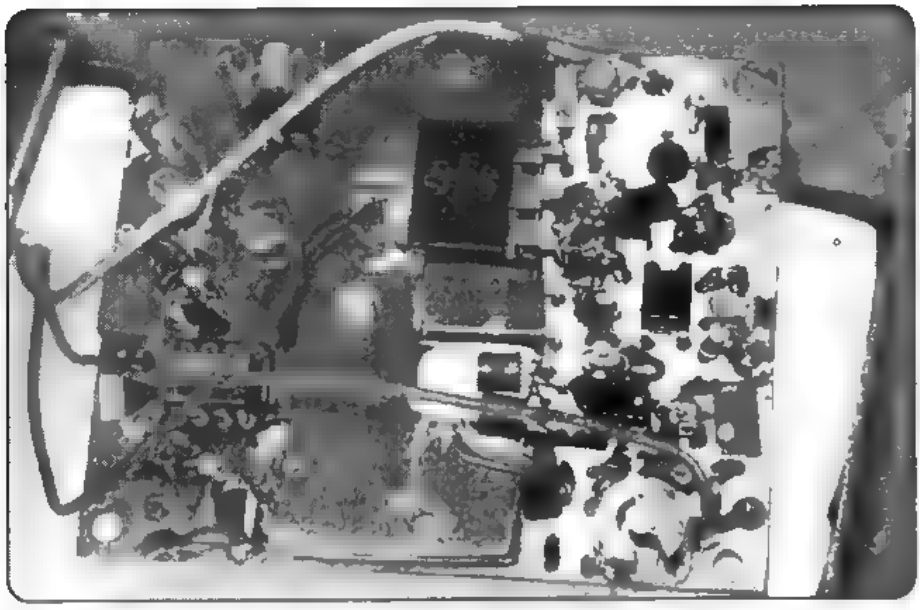

Photo 3

coupled to a dual gate mosfet TR3, through capacitor C9. TR3 has very low feedback capacitance (of the order of 0.02 pF) and therefore there is very little effect on the oscillator from influences at the buffer output. The drain circuit of TR3 contains an autotransformer, T1 with the centre tap coupling signal to the base of the output emitter follower, TR4. A resistor, R14 is included in series with the emitter of the output transistor to make the output impedance close to 50 ohms. The output power in the prototype was 8 dBm or about 1.6-volt p-p into 50 ohms.

Construction

The two sections of the reference are constructed on the one circuit board separated by the copper heat spreader. Photo 2 and the layout diagram Fig. 3 show the arrangement of components. The heat spreader is held onto the circuit board with two screws and spacers separate it from the circuit board, though in retrospect, this is probably not necessary or even desirable. There is a clamp over TR3, the crystal, TR1 and TR2 but it has been removed for the photograph. Springy copper leaves can be seen soldered to the underside of the clamp to press the crystal and the two transistors onto the heat spreader.

The thermistor is soldered to a solder lug under the heater transistor mounting screw. The thermistor originally comes with two wire leads and to solder it directly to a solder lug, scrape the paint off one side of the thermistor, unsolder the wire and solder that side of the thermistor to the previously tinned solder lug. Place the thermistor as close as possible to the mounting hole in the lug, leaving enough space for the screw head. An insulating sleeve should be placed over the remaining wire, which is run to a hole in the circuit board. The oscillator transistors TR1 and 2 are in plastic TO-92 packages and are mounted flat side down on the heat spreader. The varicap is placed in a dob of heatsink compound adjacent to the transistors. A small ferrite toroid is used for the core of autotransformer, T1 with a bifilar winding of 7 turns of 0.3 mm (about 30 SWG) enamelled copper wire. Toroid types FT23-43 or FT-37-43 would be fine.

The circuit board is a piece of single sided copper laminate with the components mounted on the copper side which acts as a ground plane for the whole circuit. Most of the component leads go through holes in the board and the non-grounded ones have the holes slightly countersunk to prevent shorting to ground. Inter-connections are made underneath the board using mostly just the component leads. This is a method that I have developed after less than satisfactory results making medium density PCBs at home. I lay out the board using a computer package (Protel) in the normal way as if I were making a PCB but instead of etching the board, I use the top overlay diagram as a template to drill the holes.

First thoroughly clean the copper side of the board with steel wool and water then tape the layout diagram over the copper side. Use a punch to make pop marks through the paper where the holes are to go. Next remove the paper and drill all the holes with the smallest size of drill. I find 0.8 mm is a good one for most components The larger holes can be bored out to the correct size later. Now we have to countersink those holes where leads pass through the board without connecting to the ground plane. I find it much easier to make the solder joint to ground if the hole is not countersunk, so mark with a felt tip pen those holes where a ground connection is to be made. Most inks in these pens can be soldered through so don't worry about the ink preventing a good solder connection. Try to mark all the earth holes so as not to countersink them but don't worry if you miss one or two as it is still possible to solder the lead to the ground plane around a countersunk hole. It just takes a little more solder

All the unmarked holes can now be countersunk. Do this very carefully with a small drill bit. 2.0 mm is about right. Only a slight countersink is required, just enough to remove the burr around the hole. A 1.5 mm countersink diameter is plenty. The board is now ready for loading the components except for one thing. It is a good idea at this stage to spray the copper side with PCB lacquer to keep it shiny looking. If you are using IC sockets it is useful to cut away a bit of the plastic housing of the socket above any pins which are grounded. Doing so makes it much easier to solder the pin directly to the ground plane once the socket is inserted in the board. This is most applicable to the corner earth pin of logic and opamp IC's but can be done with all earthed pins. Terminals for power input and signal output are made to pins soldered to isolated pads in the ground plane. These pads can be cut with a PCB counterbore available from Farnell Electronics (Cat No.146-413) They aren't cheap at $22 or so but do a nice job of cutting round pads in the ground plane. It isn't necessary to cut these isolated pads, though The 0.8 mm hole can be drilled out to the size appropriate for the pin that you have and the pin will be retained in the countersunk hole by the solder joint under the board

Components can now be placed in the

board a few at a time and the underside connections made. Solder the connections as you go rather than putting many components in then turning the board over. This will prevent the components falling out when you turn the board over to make the solder joints. Inevitably some connections will be required which cannot be made with the existing component leads. To make the shorter connections, I have retained a large number of offcuts of component leads in a flat tin so that when a short connection is required I use one of those. For the longer links I use single strand kynar insulated wire, the type used for wire wrapping but any ordinary hookup wire will do.

This may all sound messy and time consuming compared with simply dropping the components into a PCB and soldering them in place, but I have found it preferable to generating a PCB layout, transferring it to coated board or using a toner transfer process then etching the board in the XYL's laundry often with not entirely satisfactory results

An etching pattern is provided for the bottom side of the board for those who wish to etch their own. Double sided laminate should be used and the top side protected from etching by covering with adhesive tape or adhesive "Contact" film.

The board in the original is mounted in a box fabricated from 1.5 mm zinc annealed steel The corners were welded at a local workshop for $10. Two coats of self priming spray paint gave a nice finish to the box The lid is secured with two screws in opposite corners of the lid going into threaded spacers screwed to the bottom of the box. Insulation was cut from a sheet of 20 mm thick polystyrene board with pieces on all 6 sides of the box A diecast box would serve very well if you don't want to roll your own and even a plastic "zippy box" would do although a metal box is preferred for RF screening

Testing

I built and tested the oven controller section first When you first power it on having checked your wiring, monitor the supply current. It should start out at between 300 and 350 mA falling to a level dependant on how well the board is insulated. Initially, it probably isn't insulated at all, so the current will vary depending on draughts blowing across the board. Check that the reference voltage is correct, 6.9 volts with the LM329 device shown on the circuit. Look at the voltage on the output of the opamp. It should be free from large variations or oscillation If you have used similar components to the original and a similar type of construction, the compensation components C1 and R7 in the oven controller should not need to be altered. If the thermal coupling between the heater transistor and the thermistor is changed substantially or the reference voltage is changed, you will most likely have to suppress oscillation in the control loop. I find in these circumstances that if you make C1 and R7 comply with the following equation, the loop will stabilise.

$$F = 1/[2*pi*(C1*R7)]$$

where F is the frequency of oscillation of the loop.

I chose a value for C1 (1 uF) then worked out a value for R7 based on the above equation. This is certainly not a rigorous design based on control system theory but a "good enough" cut and try method.

With some rudimentary insulation over the board, say a folded up towel or other piece of cloth, the supply current should stabilise in about 4 minutes after a cold switch on and settle at somewhere between 50 and 150 mA depending on the insulation and ambient temperature.

Testing the oscillator section starts with setting R15 and C17 to about mid-range. Ensure that the regulator output voltage is close to 8 volts. Measure the output level with a diode probe or oscilloscope I got about 8 dBm or 1.6 volts peak to peak into 50 ohms at the output. Mount the circuit board in the box, fit the insulation and you are ready to set the frequency.

Couple a little of this signal into a receiver tuned to WWVH on 10 MHz with the receiver set to USB, LSB or CW. Adjust the BFO for a note at a comfortable audio frequency. Adjust the coupling of the oscillator so that you hear the audio beat note itself beating at the frequency of the difference between the oscillator and WWVH. You should then be able to adjust the oscillator for zero beat with the Time and Frequency Standard signal.

Components

Some comments on component selection will assist those wishing to duplicate this reference oscillator Many of the components in this design were selected as they were in the junk box which has been swelled considerably in recent years by the wealth of electronic equipment of many types being available at low prices or being given away or thrown out. Therefore where I have used a specialised component because it was on hand I will endeavour to give a commonly available substitute

Oven Controller:

The *reference diode* LM329 is available from Farnell (Cat # 411-530) A zener diode would do as the bridge output differential is not very sensitive to the supply voltage on the bridge. 5.1 volt zeners have the lowest temperature coefficient.

Thermistor - could substitute 100 k device (Dick Smith R1797) change R2 to 33 k. I have a few spare 220 k thermistors if you are stuck.

Opamp is non-critical. Any single or one of a dual opamp will do, FET or bipolar input. Suitable alternatives to the 741 are LF351, TL071, TL072, LM358 etc

C1 should be a plastic film capacitor, non-polarised.

TR3 can be any TO-220 or TO-218 PNP transistor but don't use one with a fully insulated tab.

The copper heat spreader on which TR3 and the crystal and other components are mounted is a 60 mm length of 25 by 3 mm copper bus bar. Aluminium bar could be substituted but aluminium has half the thermal conductivity of copper.

Oscillator components

Crystal. This is the key to the oscillator stability but I thought that I could get good enough stability if I used a crystal of unknown source from the junk box If you want the best stability though, a crystal should be ordered especially for oven operation at the temperature of the oven. In my case this is 60 deg The oscillation mode is parallel 30 pF capacitance

Varicap. Almost any reverse biased diode will give enough frequency variation but a varicap proper will have

a higher Q. 1N914's and even power diodes such as the 1N4001 series have been used as varicaps. There are lots of varicaps available in old TV tuners, FM radios and the like so there shouldn't be a need to resort to using a power diode

Transistors. The 2N5770 is a 2N706 with tighter specs but the latter could be substituted BF199F (Altronics Z1106) would work and at these frequencies the BC547 would probably work as well, as would the 2N2222 or PN2222. A plastic case transistor is to be preferred as the metal case devices usually have the collector connected to the case. Dual gate mosfets, which could be substituted, are MFE131, BFR84 or BF981. A BC 547 could be substituted for the output emitter follower

Performance

Output Frequency 10,000.000 kHz (adjusted)

Warm up time Frequency within 1 Hz after 4 minutes

Frequency drift Of the order of 0.2 Hz per day (2×10^{-8})

Output signal level8 dBm

Power consumption 12 volts DC at 350 mA warm up for 4 minutes
140 mA at 25° C ambient

Conclusion

A 10 MHz oven controlled reference oscillator suitable for home construction is described. The oven temperature controller is of the proportional type and some hints have been given to achieve stability in the control circuit. The best frequency stability of the oscillator was not sought in this instance as it is intended that the oscillator be locked to the horizontal sync pulses of a television signal. A method of construction is described which does not involve the etching of a PCB

References.

1. Pogson, Ian "A TV-Derived Time and Frequency Standard" *Electronics Australia*, July and October 1989
2. Kimberley, Kenneth VK2PY, "An Amateur Radio Engineering Project" *Amateur Radio*, September and October 1986

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Photo top: SIG Donna Feltus and LCPL Tim Williams.

Photo right: SIG Julie Meredith and CPL Cristian Birzer.

Remembrance Day Contest

The War in the Pacific ended on 15th August 1945. Many Radio Amateurs served in the Services, both on active duty and at home. Some never returned from service. The Remembrance Day Contest is held on the weekend closest to the 15th August each year as a mark of respect to those who died

When we look back at the sacrifice of our servicemen and women and of civilians, who stayed behind enemy lines and died, we acknowledge the debt we owe them for our continued democratic way of life in Australia

However at such times it is also good to look forward and hope we have learnt something from these sacrifices So this year I have chosen to focus on the present and the future and focus attention on the signallers of today. The pictures on the cover and with this article show how we now have both men and women in the field. They are still awfully young. Some of their equipment is still backpack and whip aerial, but more of it is computer keyboard and monitor screen. The frequencies used are higher as well and satellites are important links in the total system

Let us not forget the past, but let us make sure we have learnt from the lessons so dearly paid for and we apply them to the future

LEST WE FORGET

Photographs from Captain Sandra Turner of 9th Brigade, the Army Reserve Unit in SA and Tasmania. The personnel are all members of 144 Signal Squadron. Pte Kathryn Thomas took the photos.

I wish to thank them all for their contribution to our annual act of Remembrance

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Review of the Prosistel 2051B

Martin Luther VK5GN

The VK5GN HF station is still in development, given my interests I think it always will be! The next project is a 70ft tower to support a four or five element beam for 20. I needed a new rotator.

figure 1

I have a number of rotators, five of them are Emotators. They have given excellent service. The oldest is now 25 years old and has been thoroughly abused but never failed me. My first reaction was to just buy a new Emotator. An initial enquiry to the local agent for a suitable model showed that the prices were now into the area where it is necessary to shop around. Big rotators seemed to be about $2000 or more

I had seen reference in overseas journals to "Big Boy Rotators" which were made in Italy. By coincidence I also came across reference to their use by an OH amateur who was very impressed. After some searching on the internet I found the manufacturers at http://www.prosistel.it I recommend you visit their site as they have some very interesting stuff Their biggest rotator, PST71, has braking torque of 52000kg/cm and claims to be able to turn antennas of 8.8 square metres. Don't use these on a roof mounted tower, if the beam got stuck it would turn the house!

I had some discussions with them via email. My interest was in the PST 2051 whose specification appears in table 1 However, as it uses a 12volt motor I was concerned at the kind of wire I would need for the rotor cables, would it need to have a low voltage drop? I was reassured by their specifications sent to me via email. They defined the start up and run currents. They also pointed out that the motor was designed to operate over a range of voltages and the control unit had a tapped transformer so that the voltage drop could be overcome by putting in more volts if necessary I was able to show to my satisfaction that my normal cable would do the job very nicely

Their responses were always polite, accurate and prompt. I was impressed by the service.

I decided after looking at costs, exchange rates, freight etc that I would go ahead and buy a PST2051B

The total landed cost at that time was just over $1500 AUD It would be more now because of a poorer exchange rate to the Euro. Telegraphic transfer of the funds from my bank was no problem. I had to get the correct category from the customs people but they were extremely helpful via their telephone enquiry service. In fact the only problem I had was the freight company's Sydney office who decided that my address did not exist so held it there until I tracked it via the internet and asked why it was stuck in NSW!

The pictures tell the story of what the PST 2051 is like..

Picture 1 shows the control unit .I chose the B model controller which has the following features:

- Preset with true 360 degrees rotary encoder. Means that you can turn the small knob at the top right to point to the direction that you want the antenna in. The rotator then moves the antenna round to that direction then stops. The preset is accurate to 3degrees for you vhf types. The digital display is accurate to one degree but stopping at 1 degree intervals takes a bit of skill, even using the manual paddle!
- South stop with plus/minus 70 degrees extra travel for each side
- Manual control with paddle key which includes a reverse delay
- Soft stop Brings the beam to a gradual stop rather than just a sudden lurch that would put strain on the beam, tower and rotator itself
- Large green digital display
- DB9 connector for computer control via computer interfaces such as SARtek1, ARS KCT etc
- Rotor control cable uses a professional connector with quick disconnect

The second picture shows the inside construction of the control box. This is generally very good construction. There was a small mod on one PC board which gave the added feature that you could choose either to have the stop at South or North. While the paddle looks nice and works very well the mechanical parts behind the panel are not well finished. The general construction is very rugged with an all metal container and adequate RF shielding and filtering all round. The appearance is a bit more utilitarian than the sexy curves found on most of the Japanese equipment. Should stand up to being abused by the various guest ops in the VK5GN shack! Only joking fellows!

My only serious criticism of the control box is the same for any that use digital displays or electric meters. They have to be turned on to see where the beam is headed. If I can get into the habit of always using the preset rather than the paddle then that knob will always point to where the beam is!

Picture 3 shows the actual rotator. It uses a unique design. The motor is located on the side of a worm gear box. The output shaft terminates in a flange where different kinds of mast clamps may be fixed. The wiring in and out of the rotator passes through quality bushings and seals. There is a connector on the cable coming out of the rotator which is of excellent quality. The mating connector is supplied for putting on the cable down the tower. These have a mechanical locking system to keep them connected.

The picture shows the rotator with a flexible/elastic joint between the unit and the mast clamp.

The flexible joint allows for any misalignment in the mast as well as containing a plastic material which allows some shock absorbing effect in the joint. It was included in the all up cost I mentioned earlier.

The worm gear takes away the need for any braking mechanism. A good thing in my view, the less bits there are to fail the better when it is so awkward to get rotators down from the top of a tower.

The general workmanship on the rotator is good with everything giving an air of heavy duty ruggedness.

The unit has still to do any real work at VK5GN. For various reasons the project has been stalled and will not get completed now until later in the year. However, I am sufficiently impressed with the unit to share this information with fellow hams

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Figure 2

Table 1

PST2051 Specification	
Wind Load Area	36 sq ft or 2.5 sq m
Braking Torque	10,800 in/lb or 12,500 kg/cm
Rotating Torque	1760 in/lb or 2000kg/cm
Rotation Speed for 360	+-60"
Control cable cores	5
Weight Rotator unit	6kg
Height	17cm
Base Diameter	16cm
Control box	117-230Vac
Motor power	12Vdc

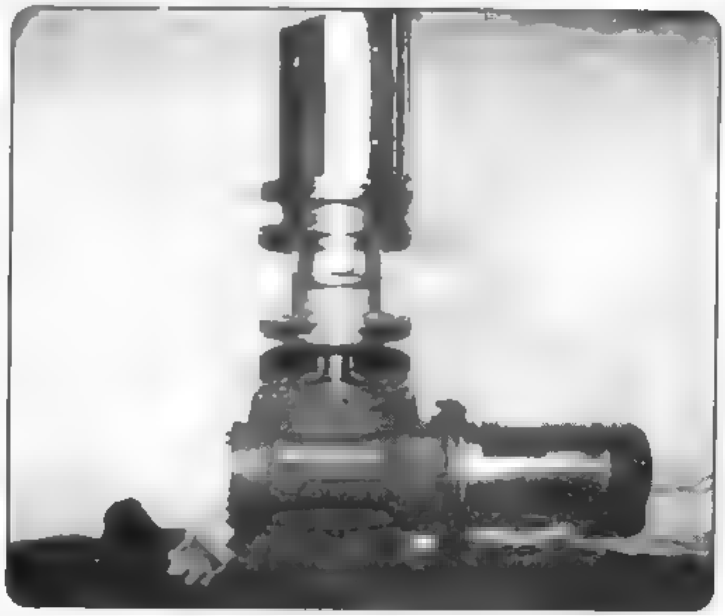

Figure 3

PLAN AHEAD

— for OCTOBER

Plan now to help some Scouts or Guides in **JOTA** or **JOTI** and spread the word that Hams are fun, Amateur Radio is interesting and it helps people.

Beyond Our Shores

David A. Pilley VK2AYD
davpil@midcoast.com.au

New problems for amateur radio?

In March 2001, a department of the German Telecom Authorities conducted a workshop, on Ultra Wide Band Communication. Participants came from all communications user groups, military to radio astronomer.

What is UWB? Ultra wide communication is a modulation method, where the transmitter produces a signal of extreme bandwidth The main areas of use are communication and position detection based on the radar principle. In both cases the intended range is very small, and maybe restricted within buildings. The most interesting aspect lies in the very high data transfer rate of several 100 MBit/s. For detection purposes, the resolution would be the equivalent of radar working with frequencies in the cm wavelength area.

UWB transmitters produce a very short pulse of 0.5 ns radiating the signal through a wideband antenna. The intended output level is between 1mW and 20 microwatts Even with this small amount of power, during the duration of the pulse, the energy produced is quite high. The transmission rate of this pulse is controlled by a random generator and spread over the entire spectrum. The following method of modulations can be used AM. Pulse position and reversing the polarity of the pulses.

In the US the FCC has already set the maximum allowable values for this type of emission Even applying very strict rules, one problem still persists, the level of noise generated will be far above the galactic noise level. Due to the large bandwidth, it will be impossible to spare any frequency range. A broad range of investigation has shown very little influence on mobile communication and GPS systems The British Radio Agency has conducted their own investigation, but the results are not known yet. Radio astronomers and the European Air traffic control authority, Eurocontrol, are strongly against this new mode. Radio astronomers work with signals near or at least close to the noise floor level. A permanent increase in this level would make their work very difficult. Eurocontrol argues, an increase in noise would influence and increase the difficulty to communicate with aircraft flying at high altitude.

Concluding the workshop, all participant groups, announced in their opinion they could live with UWB. Exception were, as pointed out, Radio astronomers and Eurocontrol. As a member of the DARC German Amateur Radio Club, Dr. H.Cuno, DL2CH participated as an observer. Dr.Cuno raised the question if the amateur radio service could participate in the investigation of the Radio agency. Unfortunately this wish was denied due to the fact that the investigation could not have more then ten participating groups. Never the less it has been acknowledged that the amateur radio service would hold the same position as the Radio astronomers and Eurocontrol.

Considering the present technological level, our microwave bands could be affected. The problems from this mode would be not as severe as from PLC. Power Line Communication, but it would still add up towards existing problems.

Compiled from a report from Dr. H Cuno DL2CH CQ-DL 6/2001 *(Translated by VK4BDQ)*

In the July 'QST' there is more on UWB and the ARRL has joined a coalition to give further study to this system of communications. They believe this new technology may offer significant benefits but feel it has not received adequate testing for potential interference with other services In spite of the FCC saying it does not interfere with other communications systems they are not alone in their concern, with some of the big names in communications being part of the coalition, with concerns of effects on such systems as GPS and PCS which could be crucial to navigation Their proposal is to restrict the system to above 6 GHz.

Mobile Problems?

GM creates Web link to aid mobile installations In response to a request from ARRL the General Motors Engineering Center has created a Web link to its official guidelines for installing radio transmitters in vehicles The Radio Telephone / Mobile Radio Installation Guidelines page is http://service.gm.com/techlineinfo/radio.html. Installation guidelines for Chrysler and Ford are reprinted, with permission, in the ARRL RFI Book, http //www.arrl.org/catalog/6834 ARRL offers additional information about automotive RFI on its Web site http //www arrl org/tis/info/rfi.car.html

(From ARRL Newsletter

Aeronautical Help.

Hams assist US Navy flight Participants on the 20 metre Maritime Mobile Net June 13 were a bit surprised when a ham aboard a US Navy plane checked in for assistance. John Pierce, KC4YWP, informed the Net that the Navy aircraft—using the military call sign 'Copperhead 5'—had lost communication with its base 'He asked us to place a telephone call to his base to inform them he was

After reading the various News info lines on the Internet and reading the overseas magazines, there isn't too much to write about. If you have any news that you feel would interest our readers, please e-mail or snail-mail me.

returning due to loss of communications,' said Bob Puharic of Pennsylvania—one of the net controllers. Puharic said that retired US Air Force Col Bob Botik, K5SIV, placed the call and informed Copperhead 5 that it had been delivered. 'The US Navy thanked the net and secured,' Puharic said.

(From ARRL Newsletter)

Are we getting older or younger?

Progress Report on the N.Z. Amateur Radio Examinations 2001 showed that 7 females and 43 males took part with an average pass mark for the exam 45 questions correct out of 60. The highest pass mark was 60 and the lowest mark attained was 24, that being the one and only failure. The average age is 43 years and the youngest candidate was 13.

NZART Morse Testing had 29 candidates, the failure of only one candidate!

A pass rate of about 97% *(NZART info line)*

Following on with this analysis, earlier in the year Bernie McClenny, W3UR, who is the editor of 'How's DX' in 'QST' carried out a survey on the DX chasers. The result was printed in April 2001 QST. Over 1400 Amateur Radio operators took part in this 32 question survey. Questions such as 'How long have you been licenced?' 'How old are you?' etc., were asked. 72% had been licenced over 20 years. 48% were aged between 15 and 30 and 69% were now aged between 51 and 80. Bernie summed it up very well by saying, and this of course refers to the U.S.A. – Most DX chasers were licenced as a teenager over 20 years ago. Most are just about due to retire, has worked over 300 countries and spends an average of 5 hours a week on air. He uses a computer for logging and is most active on 40, 20, 15 and 10. The average age of his equipment is 5 years old and he has a 50 ft tower with a tribander attached to which he runs 500 watts. His main interest is obviously DXing and he spends under $2,000 on his equipment.

So how did you compare?

ATTENTION ALL YLs

See you in Palermo!

at the

International YL Meet 2002

From the podium at YL2000 in Hamilton, Ruth IT9ESZ, President of the Italian YL body, Elettra Marconi, invites all YLs to the next International YL Meet in Palermo in June 2002.

Start planning NOW

Visiting Ireland

Ireland is pushing for the introduction of the 5wpm code standard. The Irish Radio Transmitters Society has called on the ODTR, their regulatory body for amateur radio licensing in Ireland, to implement CEPT policy and immediately reduce the Morse code proficiency speed to 5 words per minute. Society Secretary, John Corless EI7IQ, in a letter to the authority has also called for a substantial increase in UHF allocation for amateur/experimenter use in Ireland, in line with ITU allocations.

The Harmonised Amateur Radio Examination Certificate TR 61/02 was revised in The Hague in early February 2001 and published by CEPT on March the 7th. Under current regulations, applicants for Irish Class A licenses must pass a test of 12wpm, and a situation exists whereby visitors to Ireland with Class A licenses gained at the 5wpm speed, can not operate on HF bands while in that country.

This is an unacceptable situation for the IRTS, as Ireland has proven to be a very popular holiday destination for amateurs.

(From QNEWS 1/7)

Hamventions declining?

The attendance at famous Dayton Hamvention 2001 was down this year according to General Chairman Jim Graver, KB8SPO. Hamvention 2001, the 50th event, attendance 26, 151, was down roughly 9% from last year's attendance of 28,804. Hamvention attendance peaked at 33,669 in 1993, before the change in date from April to May in 1996. Graver blamed rainy weather on the opening day of the event and high gasoline prices for the attendance drop. Graver also will chair next year's Dayton Hamvention 2002.

(From ARRL Newsletter)

Amateur LF Signal Spans the Pacific!

A signal transmitted on 184 kHz from ZL6QH—the Wellington, New Zealand, Amateur Radio Club's Quartz Hill station—has spanned the Pacific. The transmission, part of a series of announced transpacific tests, was received on June 30 by Steve McDonald, VE7SL, of British Columbia, Canada.

'A claim is made for the confirmed reception of ZL6QH by VE7SL, on 184.4 kHz, over a path of 11,709 km,' said Bob Vernall ZL2CA, who organized the transpacific tests. 'This is a one-way confirmation, as VE7SL does not have transmitting capability.' Vernall said that on June 30, seven New Zealand stations—including ZL6QH—and one Australian transmitted test signals in the 160-190 kHz band for the transpacific tests. Amateurs in New Zealand have access to that band.

Reception of weak LF signals typically is done using spectrographic software. McDonald used Argo software to capture the ZL6QH signal and very likely that of ZL4OL, although no claim was being made for the latter. The reception occurred right around the time of sunrise in British Columbia.

ZL6QH was transmitting dual-frequency CW with two-minute elements, one frequency representing dits, the other dahs. The ZL6QH station was running approximately 100 W into a longwire antenna.

Amateurs spanned the Atlantic in both directions earlier this year on 136 kHz. Efforts to make it across the Pacific on LF have been under way during the winter season in the Southern Hemisphere.

The ARRL has petitioned the FCC to authorise Amateur Radio allocations at 136 kHz and in the 160-190 kHz band. The petition is pending.

(ARRL Newsletter)

ar

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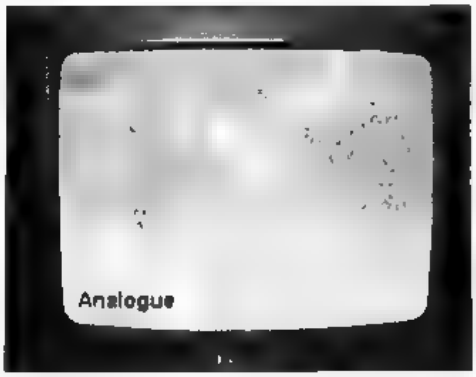
Digital TV: How good?

Six months after the start of Digital Television, how is it performing? Not many of us have a digital TV or a digital set top box, but in my work environment, digital is becoming common, and in particular looking at the final output to the viewers.



If you want to view digital TV you require either a digital TV, or go the cheaper way with a set top box at a cost of $700. About the size of a small VCR, the set top box requires a TV aerial to be plugged into it to produce a video and audio output, what we call base band. The video and stereo audio outputs are then connected to your existing analogue TV's video and audio inputs.

If you choose a digital TV there is the advantage of the wider screen which is where TV is headed. At the moment most of our television is in the 4 by 3 format, 4 units wide by 3 units high, called the aspect ratio. Digital television is designed for 16 by 9. During this transition phase from 4 by 3 to 16 by 9, interim aspect ratios, like 14 by 9 will be used so as not to annoy 4 by 3 viewers too much. You see black bars at the top and bottom of the picture when wider aspect ratios other than 4 by 3 are used. Trying to present 16 by 9 aspect on a 4 by 3 screen is always a compromise and until you have a 16 by 9 television you will be at a disadvantage as to gaining the full advantages of digital television. However aspect problems aside, digital television has much to offer right now.

Put simply, digital television from a set top box into your existing AV inputs on your analogue TV produces a high quality picture. If you live in a good signal strength area and have a good TV aerial installation, with no ghosting, then your existing analogue television reception can be just as good as a set top box plugged into your TV. However if your television reception is varied across the TV channels, with some a bit noisy and some with ghosting, then digital television can produce impressive results.

Actual Tests

A set top digital decoder installed in a vehicle connected to an omni directional TV aerial, produced perfect pictures while mobile driving through the centre of Perth city with tall buildings all around. Noise free pictures with no ghosting and no picture or sound break up. The TV transmitter being located 25 kilometres away. Very impressive, and I would not have believed it had I not seen it.

Another installation, in a small truck used for microwave linking, gave the opportunity to directly compare existing analogue television to digital transmissions. With the vehicle parked inside a building the analogue pictures were very poor, noisy with considerable ghosting of varying degree depending on the particular TV channel. Some channels were unwatchable. Switching to the digital equivalent produced amazing results with perfect pictures on most channels. This test was the equivalent of an indoor "rabbit ear" type of aerial installation. However not all digital channels could be received in this poor signal situation and some explanation of just what you see in the digital world is needed.

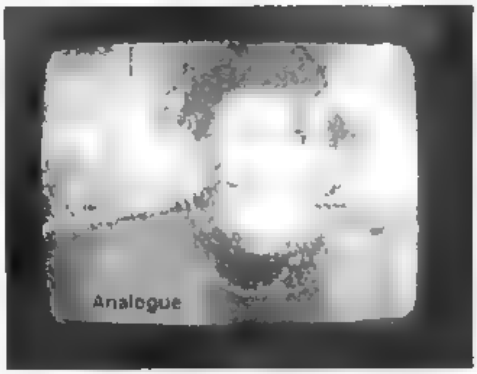
The detail of Digital

The accompanying photographs were taken inside the link truck and demonstrate just how dramatic the improvement is between analogue and digital. The digital system has ghost cancelling and this is perfect. You will not see a ghost on a digital TV receiver no matter how bad the ghosting is. Digital is either perfect or nothing. When the digital signal falls below a particular signal strength, or the ghosting is really, really bad, the digital decoder produces no output: the TV screen goes blank or blue when they have no signal. This transition between perfect and nothing is very narrow and at a guess, from observation, occurs at about 6dB signal to noise of the video picture with reference to an analogue picture. 6dB vision signal to noise is a very noisy picture and is not easy to watch to say the least. There is a narrow window of perhaps 2dB when the digital decoder goes from a perfect picture to nothing, where the digital decoder starts making a large amount of errors. This transition phase causes the picture to freeze and the sound to stop and or block pixilation. The picture breaks up into random small squares about of a few millimetres square. Some times the picture pixelates or shifts part of the picture in relationship to the rest of the picture. This narrow signal strength window, in which the digital decoder is working

hard, is difficult to watch enjoyably. The stop start, from perfect picture and sound to pixelation, frozen frame and intermittent sound is the only distortion of the picture and sound you will see on a digital picture.

Pictures

The accompanying pictures say it far better than words. The pictures fall into 3 categories, analogue (lots of noise and or ghosting) digital (perfect) and the in between state for digital with frozen frame and or pixelation.



Digital Conclusions

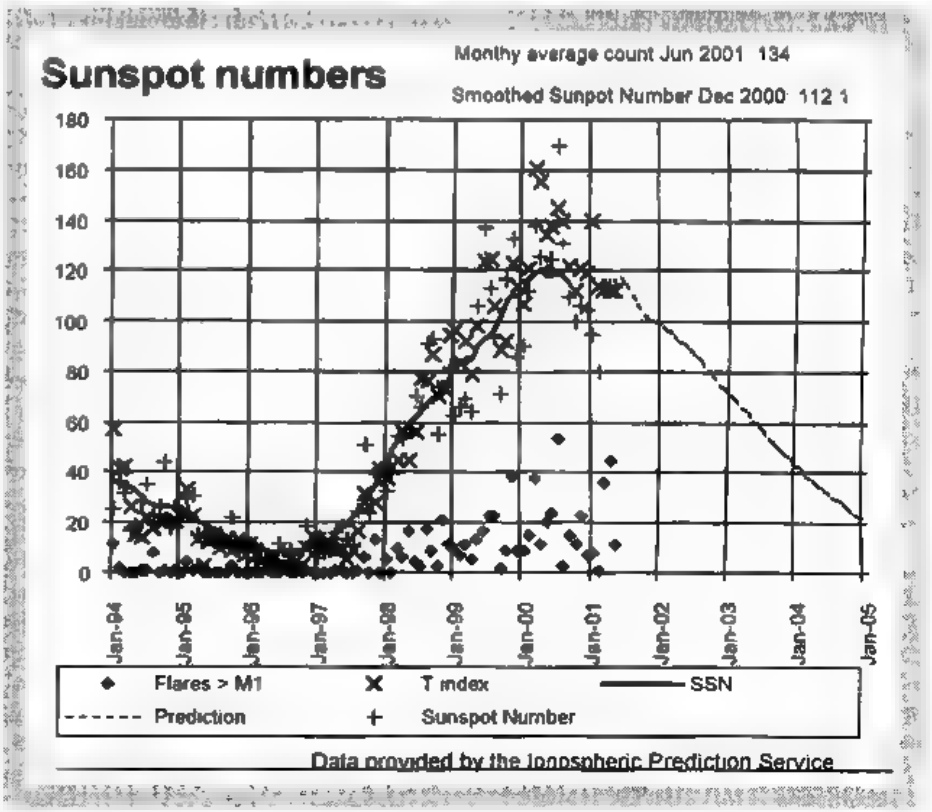
Digital television produces a high quality picture free of ghosting and noise at signal levels that the analogue cannot. An added benefit is if you live in an area suffering from power line interference, a digital decoder will produce a perfect picture in all but the most extreme cases of interference. Also if you live in a fringe area and you are able to receive a pixelated stop start digital picture, then only a small improvement of say, 2dB in your TV antenna, would be required to receive a perfect picture. The Thompson digital decoder I used has a signal and digital quality software meter in the setup.

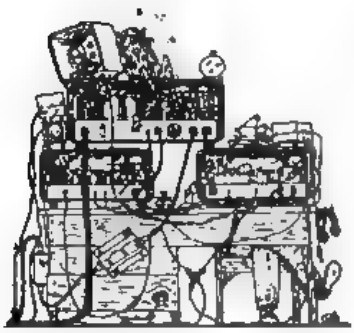
What about amateur radio TVI? It would appear that we could expect digital television to be less susceptible to other radio transmissions nearby. I used a VHF transmitter close by the digital receive aerial and when the transmitter did cause problems the results on the digital reception was just the same as described with lack of signal strength, frozen picture and or pixelation. At the very least it could prove more difficult for the viewer to figure out their digital reception problems are coming from amateurs.

There is another bonus with digital television the television stations are moving from analogue production, recording and inter station transfer to digital means This results in a considerable improvement in picture quality and in particular vision noise. When all this comes together the viewer equipped with a digital decoder on his analogue receiver sees a picture with a 10dB improvement over the very best of the previous analogue picture.

Erasing Digital

I witnessed a demonstration of a digital videotape being bulk erased twice in a large powerful commercial tape bulk eraser. The tape was then inserted back into the digital recorder and played. The picture was near perfect with only the occasional pixelation where there were moving aspects in the picture, but all in all a near perfect picture!





Ham Shack Computers

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Part 5: Upgrading

Most computer users are caught in the "upgrading frenzy" attempting to keep up with the technology explosion. For most Radio Amateurs, this practice might not be the best or a cost-effective option on a tight budget.

Having decided your intentions, and gazing at your old or existing Ham Shack Computer, lift the lid and list all the important attributes. These may include:

- Type of motherboard.
- Processor chip make and type.
- Memory size and hard disk capacity.
- Input and output devices such as floppy drives, com ports etc.
- CD-ROM, printer, mouse, keyboard and the operating system software.

With this information, including spare card slots, space to add new devices in the computer case, then serious planning can be done to determine if it's worth upgrading the computer. XT, 286 and 386SX type computers with limited hard drive space and small memory size can only be effectively used for DOS based packet and logging applications. Later Pentium 100 computers with bigger hard drives and around 32 Mb of memory are fine for running today's Windows AR applications.

Adding Floppy Drives

Old Intel 8086, XT computers with a 20Mb hard drive and a single 360kb floppy drive can be "recycled" by fitting a new 1.44Mb floppy drive in place of the clumsy and obsolete 5", 360kb drive. The new drive will need a large faceplate to fit the XT case, and rails to secure the 1 44Mb drive neatly into place. Fit an adapter cable to connect the power between the existing wiring harness to the new drive (DSE X2605). Lastly, plug in the data cable and boot up. Set the BIOS to acknowledge that drive A:\ is now 720kb

Next modify the DOS **config.sys** file by adding: **Drivparm=/d: 0 /f: 720**

Use another computer to format some 3", 1.44Mb high-density disks for your old XT as 720kb floppies Do this at the DOS C:/ prompt with the command. **Format A:/f: 720**

The "old XT" is now ready to install your favorite software using the new 720kb floppy A:\ drive.

Readers with more modern computers can add a second 1.44Mb drive, or replace old 5", 1.2Mb drives with a 1.44Mb drive for less than $50. Fit the new drive in a spare hole in the case, add the data cable using the second multi-plug on the floppy ribbon cable. Lastly, connect a spare power supply plug into the new drive. Reboot the computer and enable the BIOS setup menu. Configure the BIOS to recognise the new drive as drive B:\ and the size setting to 1.44Mb. Save and Exit, then reboot. Now you have TWO floppy drives (A:\ and B:\) which are great for copying floppies for software back-ups or swapping with a friend

Hard Drive Expansion

As the saying goes–"There's never enough room on my hard drive!" One easy trick is to ADD a second hard drive. Computer dealers have stacks of old drives left over from "upgrades" These drives range from 200Mb upwards and can be bought for a few dollars Installation is easy, with a crosshead screwdriver, the drive is fitted to a spare mounting in the case. Fit the power supply cable and connect the second ribbon cable plug in the harness between the motherboard and drive C:\.

Enter the BIOS system; add the new drive as say D:\ with automatic setup recognition. Reboot and check the installation of your new drive.

A brand new 20Gb hard drive!

Upgrade parts are continually falling in price. The DSE XH7041, 20 5Gb drive seen above will offer massive hard drive storage Modern motherboards have a secondary EIDE bus to connect your new drive with an additional ribbon cable Like the earlier floppy drive installation, connect a spare power supply feed to the new drive, then use Microsoft Windows 95/98/2000/Me to Install New Hardware option. Windows will move your CD-ROM to drive E:\ and allocate the new hard drive as drive D:\

Copy all the files from your old C:\ drive onto the new D:\ drive. Swap around the EIDE plugs on the motherboard, and use Windows to identify the new drive as drive C \ and the old hard drive as drive D \ Windows should now boot from your new 20Gb hard drive.

The smaller old hard drive can now be used to backup programs and files simply by copying them from drive C:\ This is a cost-effective option offering bigger disk space and fast backup capacity all-in-one simple modification

Disk Maintenance

When installing new or "recycled" drives, check for disk errors using Microsoft Scandisk and Defragmenter. Use the View Details option in Defragmenter to see if there are any bad sectors on the drive. A clean drive is your objective, but check and defragment them at least monthly to keep data contiguous and maintain fast data access.

R/W CD-ROM's

Another excellent upgrade for your Pentium 100 or higher is to replace your old read-only CD-ROM drive with a new read and write CD-ROM drive. For about the same price as an Iomega Zip Drive kit storing only 100Mb on one $25 disk, R/W CD-ROM drives can store 650Mb on a $1 write only CD-ROM disk! For both read and write capability the blank disks retail at around $5, which is still 75% cheaper than blank Zip disks.

Use Windows to uninstall the old CD-ROM drive, fit the new R/W CD-ROM drive according to the instructions in the kit, and then ask Windows to Plug-and-Play install the new R/W drive. Good quality R/W disks are capable of 1,000 R/W passes which are more than enough in the average Ham Shack. If you still use old data tape backup systems then it can be finally relegated to the rubbish bin! Most proprietary software these days is distributed on CD-ROM's. Recycle the old CD-ROM drive in your 486DX2/66 computer making future software installation a breeze.

Memory Chips

Small, onboard memory chips used in old 286 and 386 computers cannot cost effectively be upgraded. Use this computer as a dedicated packet/logging machine. 486DX/50/66/100's use EDO RAM (Random Access Memory) chips that come in pairs With a spare pair of EDO sockets, add a pair of 8, 16 or 32Mb RAM chips EDO is hard to find these days but "computer recyclers" might have what you are looking for.

Modern AT/ATX motherboards use single 168pin SDRAM chips in sizes from 32 or 64Mb at about $100. Onboard free sockets can be used for a very simple upgrade just by plugging in the new chip and Windows 95/98/200/Me will identify your new memory size.

When upgrading computers, and to minimise damage to chips by electrostatic discharges, always use an anti-static wrist strap earthed to the case. Keep the power plug connected to the computer but with the supply switched off at the power outlet.

Clock Batteries

64Mb PC133 168pin SDRAM

Will operate on PC100MHz, PC66MHz and 133MHz motherboards

Often ignored but essential in keeping the master clock in the computer running when the computer is switched off.

Batteries are usually 3.0-volt mercury or lithium built in stacks with metalised ends for soldering or round "button batteries" clipped into a small plastic holder on the motherboard. The latter is easiest to replace with a new battery from Big W stores (EG: Panasonic CR2032 or equivalent).

Colin, VK6BQ suggests one way to replace soldered 3.0-volt computer batteries is to use a double AA plastic battery case (Altronics S5025/P0455) with the wire ends soldered to the motherboard. Secure the holder inside the case with Velcro. AA batteries are cheap and interchangeable with the XYL's TV remote control!

Universal Serial Bus (USB)

ATX/BX or higher motherboards now support USB technology and can "hot connect" devices such as cameras, scanners, printers and mouse's in a cascade manner from the same bus connector. AT computers without USB can be upgraded with the addition of a USB card plugged into a spare PCI motherboard socket.

Windows Plug-and-Play automatically configures USB ports for new devices. USB networking can also be installed using a hub and connecting other USB compatible computers into the network.

BX and later motherboards have 2 RS232 ports and 2 USB ports. By using a USB port for a mouse, it clears a valuable RS232 port for AR applications such as transceiver control and logging.

Sound Cards

Any SoundBlaster compatible 16 bit ISA card will do fine for experimentation with PSK31, MFSK16 and other data modes If you find a card with Line In together with a Mic In sockets – all well and good for connecting your AR rig. The writer uses ESS 1868 sound cards which are economical to buy, and delightful in PSK31 or RTTY pileups'

With sound cards, some have ATAPI ports to control CD-ROM's, so if you are upgrading check with your dealer before spending hard earned cash.

Upgrading Software

Most active RA's are always upgrading software. New versions are released, upgrades as "bug fixes", better versions from somewhere else etc – and the list goes on. Hence the valuable nice new BIG hard drive which can store several versions of the same program so proper evaluation and comparisons can be done.

This is a "never-ending topic" to which the writer cannot hope to satisfy all the readers of this column. The quick answer being .. "Some do, and some don't, and some will, and others won't' We each have different computers, with different software, and use it differently!

Some AR's prefer Linux, some even use Macintoshes with System 7, others are DOS fanatics, many prefer Windows – and there are many versions of all these operating systems from which to choose.

Applications are the programs that run "on top" of the operating system. There are thousands to choose from. So, with just two pages in this magazine we don't stand much of a chance to cover the lot'

Ham Tip No. 5

Place your finger on top of the processor chip in your computer. If it's too warm to touch, fit a $10 mini processor fan to keep it cool (Altronics F2010).

Ham Shack Computers, Part 6, Internet

Looks at installing, connecting to and using the Internet for AR applications on your Ham Shack Computer. Thanks to all respondents for support, comments, feedback and suggestions.

73's de Alan, VK6PG

ALARA

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The Contest

Remember we have a new date for the ALARA Contest, this year, the last weekend in August This means that there will only be two weeks between the Remembrance Day Contest and the ALARA Contest. The gear you specially prepared for the RD should still be all ready and waiting for ALARA as well.

Remember also we have two evenings on 80 metres as well as the whole day in which to make use of the other bands. The contest starts at 0600 UTC on Saturday 25th August and ends at 1159 UTC on Sunday 26th. Please be there. We hope that the change of date and extended hours will make it possible for more people to join in. As well as YLs and OMs operating on their own, clubs (whether they have YL members or not) are very welcome, as are Guide and Scout Groups (you might even treat this opportunity as a practice run for JOTA)

Please let us have a winner for the Florence McKenzie Trophy this year. All CW operators are permitted to enter and the minimum number of logs is only 5 (five) though we would like you to have more than that, Of course, please remember that we can have repeat contacts after an hour, on all the bands and modes.

If you are a CW operator or even if you CAN operate on CW, but don't want to compete for the trophy, you can still give contacts to those who do wish to enter a CW log. I know there have been complaints recently that there are simply not enough people willing to give it a try. Hopefully that will not be the case, this year.

This year as well as the usual snail mail method of submitting your logs, you can send them by email to Marilyn, VK3DMS at the address gsyme@hotmail com instead.

All the details are in the ALARA Newsletter or in the May AR. Do participate. It is a fun contest in which there is always time for a chat.

International Lighthouse Weekend

Last month mention was made of the participation of Susan VK7LUV and her OM Alan VK7JAB, in the International Lighthouse & Lightship Weekend, which takes place in August each year. Susan has sent me more information about it all which I am sure you will find to be of interest, especially if you have heard of it but don't know just what it is all about.

The International Lighthouse & Lightship Weekend is a 'Special Event', not a contest, which is intended to promote both Amateur Radio and Lighthouses in a fun manner. The ILLW event is used to gain exposure for our hobby and to highlight the international aspects of Lighthouses, Lightships and Amateur Radio.

For 2001 this event will be from 0001 UTC Saturday 18th August to 2359 UTC Sunday 19th August, Susan and Alan will be operating from Low Head Lighthouse as well as the Tamar Leading Lights (Tasmania).

NOTE This is the same date as the RD Contest so Susan and Alan will be participating in both contests from the lighthouse.

Last year (2000) approximately 200 Ham Radio Operators worked from Lighthouses or Lightships around the world, this year we are expecting many more. There are often special QSL cards, with a photo of the Lighthouse, and some stations offer certificates also.

No doubt a number of amateurs already participate but there is always room for some more. Why not have a listen and make a few contacts. The QSL cards sound as though they would be an interesting addition to your 'brag wall'.

Recent Hamfests

Judy VK3AGC and Claureen VK3LCM were the only two YLs at the Bendigo Hamfest while Marilyn VK3DMS and Brenda VK3KR were both at the SERG Convention in Mount Gambier.

Mary VK5AMD is usually at SERG Conventions but this year family commitments prevented it However, on their way home Marilyn and OM Geoff VK3ACZ called in and spent a pleasant hour or so with Mary and OM Murray

A couple of corrections

Recently you read the story of the Vegemite tasted in Hamilton In error it was suggested that June VK4SJ had taken the Vegemite – and some honey – to Hamilton. In fact it would be breaking import laws if they had done this It is forbidden to take honey from one country to another because of the danger of infection. Sorry about that, June I misread the item (which I translated incorrectly from German).

In fact I should have realised and remembered. There was Vegemite in the 'goody bag' we were all given on registration.

However, June and Doug were present when the Vegemite was tasted – and not appreciated.

There was also an error in the name of the café where the VK3 YLs meet each month. There has been a change of name but not of location. It is the "Melba Café" in Little Collins Street where they meet on the second Friday of each month

Any visiting YLs are very welcome from about 10.30 onwards.

ALARAMEET 2002 Website

In preparation for the ALARAMEET in Murray Bridge next year we now have a website where you can leave an expression of interest etc. Our thanks to the son-in-law of our coordinator, Jean VK5TSX Find us on: -http // alarameet2002.8m.com/

There are links to the accommodation venues, where they have them and information about the plans in hand. Please have a look and leave you email address so we can keep you updated

Pounding Brass

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More interesting Websites

Over the past few weeks I've been investigating a number of interesting Internet sites on telegraphy and electronics The amount of information contained within these sites is absolutely astounding. As much as I would love to take it all in its just impossible especially with family and work commitments at the moment, its just a matter of sifting through each site in turn and absorbing the information relative to your needs.

So let's continue on with last month's column in relation to interesting telegraph Internet sites.

Dxer.com-Morse code (CW)

Address:http://dxer.com/cw.html

This is just a brief overview of Dxer.com site; it's worth looking at.

This site contains a number of links to other telegraph societies from around the world. Some of these societies are as follows:

1. EHSC–Extremely High Speed Club.
2. HSC–High Speed Club.
3. SOWP–Society of Wireless Pioneers.
4. Vibroplex–Vibroplex Collectors Page

Moving along will have one of the best sites so far found on the Internet

PA3BWK's Ultimate Morse Code Website

Address
http://www.morsecode.dutch.nl/index2.html

This site is absolutely amazing and contains the following:-

1. **CW Links** This contains commercial software and links to other telegraph sites
2. **Morse Code Dr.** This is a question and answer forum
3. **Morse Code Clubs** Current clubs from around the world.
4. **Art Page** This contains artwork, poems and comics with a telegraph theme
5. **Various** Contains such things as PDF Library, CW Study Tips and Building

Projects

Let's have a look at 'Building Projects'

Opening Building Projects you are give a Project List that contains such things as:-

Antenna's, RX, TX, Amps, Morse Circuits and a wealth of other technical information for the home brewer. Under each of these headings you are given a list of projects to build. For example looking at 'Transmitters' we have at least 10 different projects to construct, some of these include the following:-

1. QRP HF TX.
2. 250mw HF CW TX
3. 1 Valve CW TX.
4. QRP SSB HF TX.

I would rate this site as excellent and strongly recommend it to you.

Moving along we have, Morsum Magnificat, The Morse Magazine.

Links to other web sites of Morse interest

Address. -
http://www.morsum.demon.co.uk/links.html

Again another excellent site to visit with a wealth of historical and technical information. This site contains a number of main headings and under each heading is a particular topic relating to that heading.

The main headings covered here are as follows:-

1. Samuel F B. Morse
2. Morse Telegraphy – articles and online information
3. Telegraph Museums and Collections
4. High Speed Morse contests
5. Clubs and Organisations with an interest in Morse
6. Morse for the disables
7. Maritime Morse
8. Morse Miscellany
9. Morse Practice Schedules
10. Morse Programs Available
11. QRP (low power operating)
12. Suppliers of Morse equipment

Let's take an example: "Morse Programs Available"

Under this main heading we have about 14 different Morse related programs from around the world. some of these programs are:-

1. G4ZFE CW Pile Up Simulator
2. Morse Code–From Canada for beginners and experts
3. NuMorse–a shareware Morse tutor for windows

It would take many a long hour to go through all of these programs but I'll give it a go and report my findings in later issues of this column.

Other sites on the web are:-

1. NW7US Morse Code Radio Center
   Address:http://cw.hfradio.org/
2. VK3NDS Amateur Radio Website
   Address:http://www.tbsa.com.au/~dsimp/cw.htm
3. Morse Code Practice Oscillator by Tony Van Roon – Using the common IC 555 Timer Chip
   Address:http://www.uoguelph.ca/~antoon/circ/morse1.htm
4. Last is the Morse code pileup trainer for sound blaster compatible sound cards
   Address·
   http://packages.debian.org/stable/hamradio/pileup.html

Well this concludes telegraph Internet sites for the time being or until I come across one of interest and of course I will let you know

My e-mail address is in doubt at the moment as I am with one.net, temporary e-mail address is: vk2sps@yahoo.com

See you next month

Steve VK2SPS

ar

Technical Abstracts

Gil Sones VK3AUI
30 Moore Street, Box Hill South, Vic 3128

RFI Tracker

A simple RFI tracker appeared in QST March 2001. The author was Rick Littlefield K1BQT. The design uses a TRF receiver and a compact 2 element beam to provide a means of tracking RFI

The TRF receiver is tuned to a frequency in the 136 MHz region which is a portion of the aircraft band with only a small amount of traffic The antenna used is a compact two element Moxon Rectangle which you might have met in another guise as a VK2ABQ HF compact beam.

The receiver circuit is shown in Fig 1. The components are all readily available and reasonably non critical. The inductors are air wound L1 and L2 were given as 5 turns No 24 tinned wire formed on the threads of a #6-32 screw. Try 1/8 inch or 3mm. L3 was 11 turns No 24 tinned wire formed on the threads of a #8-32 screw. Try 5/32 inch or 4mm.

The coils are tuned by spreading or compressing the turns.

The antenna is shown in Fig 2. It is a simple compact two element design The antenna has a cardiod pattern with a broad forward lobe and a sharp and deep rearward null. The peak is used for initial tracking and the null can be used to pinpoint the RFI source.

You may hear aeronautical traffic but it should be brief and transitory The tracker should be peaked in the middle of the antennas resonant frequency to give best performance.

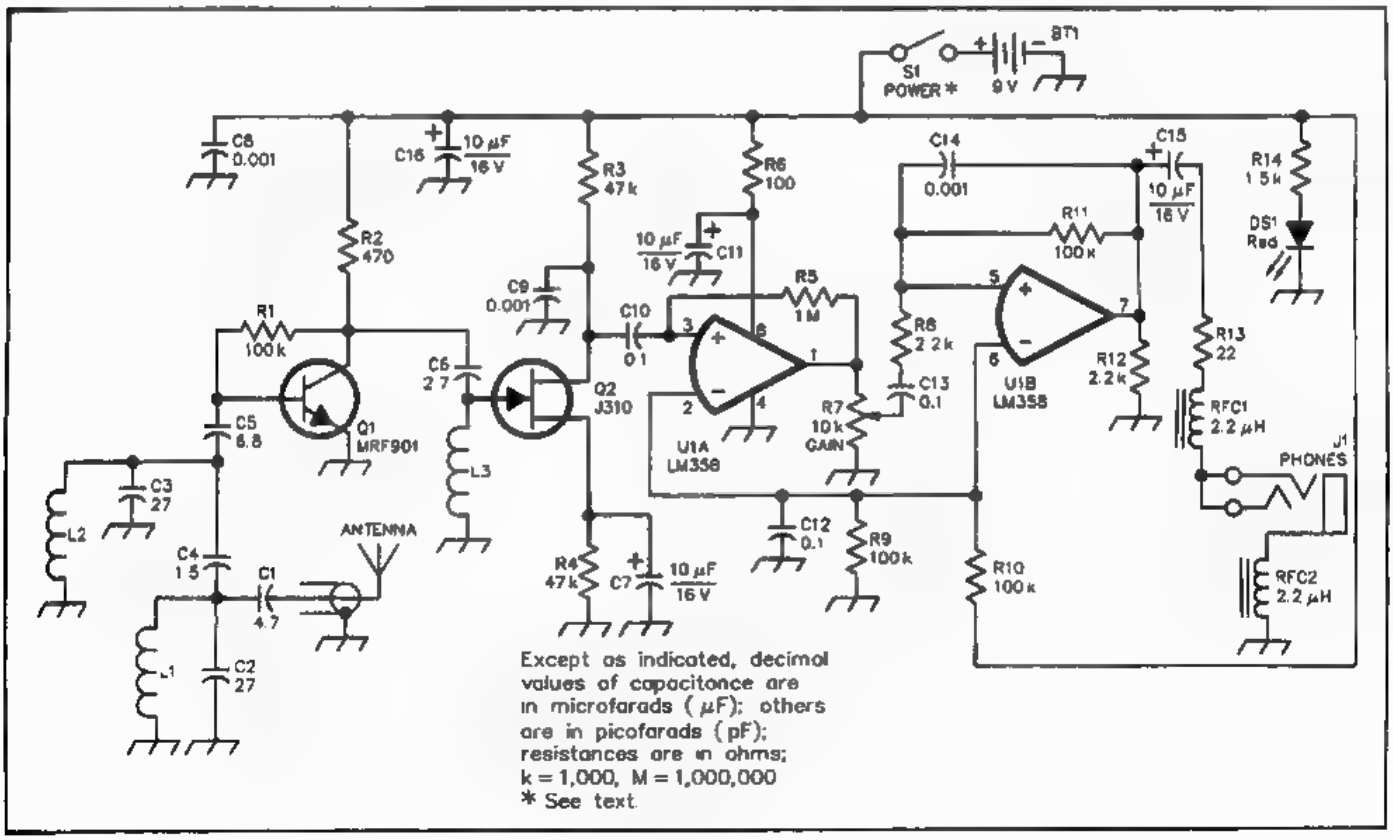

Fig 1. TRF RFI Receiver.

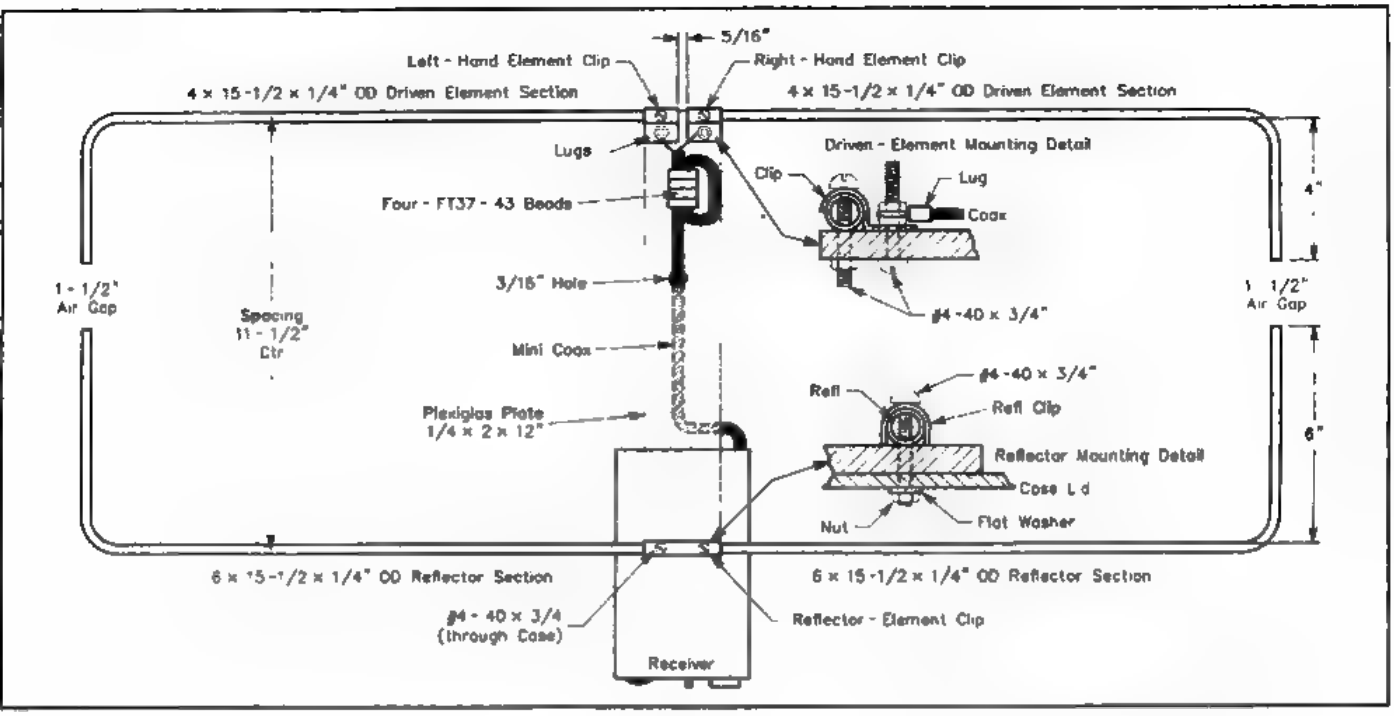

Fig 2. Antenna for RFI Tracker

Grounding

In his In Practice column in Rad Com Ian White G3SEK discussed grounding of components on printed circuit boards. The discussion appeared ion the January 2001 and March 2001 issues of Rad Com. For VHF/UHF circuits and where microstrips are used one side of the board has the circuitry and surface mounted components and the other side is a groundplane. There are a number of places on the component side which will need to be grounded. This is done commercially by making an earth patch or area on the component side linked to the ground plane by a series of plated through holes. For amateur one off circuits this is impractical and instead of plated through holes wire links are used.

The use of wire links is shown in Fig 3(a). The wire used is between 1.5 and 2mm in diameter. This results in a low impedance ground with a number of links in parallel particularly at lower frequencies. The equivalent circuit of the earthing is shown in Fig 3(b). The parallel inductance of the links and the capacitance of the patch produce a parallel resonant circuit which may be in the 5 Ghz region. The impedance is low but will climb sharply in the region of resonance This is fine for many applications but may give problems when bypassing GASFETs such as are used in Rx frontends as these devices have gain well up into the GHz region. This could explain unwanted oscillation.

An alternative circuit from S53MV is shown in Fig 3(c). Here a 2 to 2.5mm hole is drilled adjacent to the position of the earthy end of an SMD bypass capacitor. On the groud plane side of the board a piece of copper foil is soldered over the hole The hole is then filled with solder. The SMD component is then soldered to the solder filling the hole. The solder filled

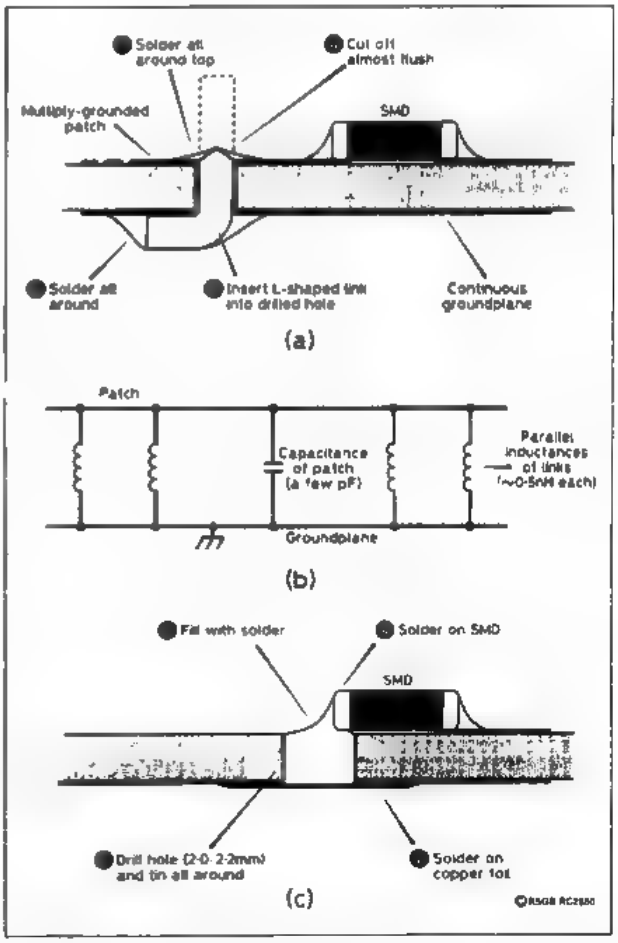

Fig 3. (a) Dip Links using solid wire. (b) Equivalent circuit of several dip links in parallel. (c) Alternative technique from S53MV.

hole acts as a large diameter post to provide a low impedance earth for the component.

In the March 2001 column in Rad Com Ian White G3SEK provided another method of bypassing which was submitted by Chris Bartram G4DGU who was involved originally with MuTek. This technique is shown in Fig 4. A small SMD capacitor is mounted directly through a drilled hole. For 1.6 mm printed circuit board the ideal capacitor size is 0603 because the metallisation on the capacitor ends will be flush with the copper on both sides of the board. An 0603 size capacitor is 0.06 x 0.03 inches which is 1.6 x 0.8 mm in size. A hole of about 1.1 mm diameter is required. The best approach is to drill an under size hole and then open this up to 0.9mm square using a hard steel broach. A broach is a tapered hardened steel tool used to open up round pilot holes. You will need to be very careful so as not to snap the tool

This technique can be used to provide virtually zero lead length bypassing. The use of multiple bypasses using this technique could produce an effective bypassed patch.

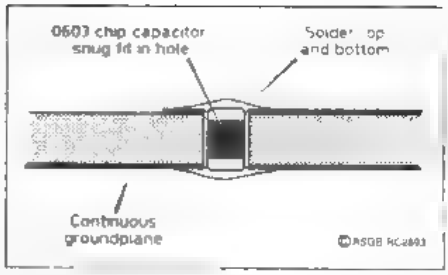

Fig 4 G4DGU's Technique Using an 0603 SMD Chip Capacitor mounted directly through a hole in 1 6 mm PCB

International Lighthouse/ Lightship Weekend 18-19 August 2001

From Kevin VK2CE,
Australian Co-ordinator for the event.
Web site: http://www.vk2ce.com/illw

The event is NOT a contest, each station decides how they will operate their station regards modes and bands. Participants are not committed to being on the air during the entire period - only as much as they can. There are no restrictions on aerials or power. We wish operators to enjoy themselves and have fun whilst making contact with as many amateur radio stations as possible. We request stations to take some time to work the slow operator, the newly licensed and QRP stations. Space in many lighthouses is filled to capacity, so our activity does not have to take place inside the tower itself Field day type set-up at the light or other building next to the light is OK

The event is used to obtain maximum exposure for our hobby. We might catch a future radio amateur while creating goodwill for the hobby. So do not forget to get PERMISSION from any interested parties i.e. THE OWNER OF THE SITE.

We use the event segment of the 5 'Classic' bands with a centre frequency if conditions are bad, at least we have one place we can (try to) meet We request that the centre frequencies are not used as primary frequencies but as a last point of call to other participating stations.

CW	Centre
3.510 -3.540	MHz 3.521 +/-
7.005 -7.035	7.021 +/-
14.010 -14.040	14.021 +/-
21.010 -21.040	21.021 +/-
28.010 -28.040	28.021 +/-
PHONE	
3.650 -3.750	MHz 3.721 +/-
7.040 -7 100	7.051 +/-
14.125 -14.275	14.221 +/-
21.150 -21.250	21.221 +/-
28.300 -28.400	28.351 +/-

Because it is not a contest you can operate on any authorised QRGs as per your licence. Participating stations are asked to add 'LIGHT' , 'LGT' , 'LIGHTHOUSE' or 'LIGHTSHIP' after their call. UK stations normally obtain a GB callsign with the letter L in the suffix to assist other stations identifying them. So come and join us in the fun of the weekend, establish a station at a lighthouse, lightship or maritime beacon. The more the merrier. If you decide to join us could you let me know the callsign you will use, QTH and QSL information. This year there is an on-line entry form at http://www.vk2ce.com/illw. There are also links on this web site to the list of entrants for 2001.

73s Mike GM4SUC,
gm4suc@compuserve.com

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D 3425

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D-3665

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- High-performance receiver front-end circuitry using Yaesu's renowned Advanced Track Tuning (ATT) tracking bandpass filter design.
- Includes MH-48B6J DTMF microphone for direct keypad frequency entry, plus convenient Menus with 35 'set and forget' functions.
- 149 memories are provided, with 130 regular memories, 9 pairs of sub-band memories, and an instant recall 'Home' memory.
- Additional features: Supply Voltage Display, transmit Time-Out Timer, Auto Power Off, and S-meter RF Squelch.

D-3638

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2995 DPS SPOT

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The Amateur Radio Service exists for the purpose of self training, intercommunication and technical investigation. It is carried out by amateurs who are duly authorised people interested in radio technique solely with a personal aim and without pecuniary interest.

The Wireless Institute of Australia represents the interests of all radio amateurs throughout Australia National representation is handled by the executive office under council direction There is one councillor for each of the seven Divisions. This directory lists all the Divisional offices broadcast schedules and subscription rates. All enquiries should be directed to your local Division.

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GPO Box 600, Canberra ACT 2601

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Treasurer	Ernest Hosking	VK1LK

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(Office hours Mon-Fri 1100-1400)
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Web: *http://www.ozemail.com.au/~vk2wi*
Freecall 1800 817 644
e-mail: *vk2wi@ozemail.com.au*
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Phone 03 6234 3553 (BH)
Web: *http://www.tased.edu.au/tasonline/vk7wia*
also through *http://www.wia.org.au/vk7*
email: *batesjw@netspace.net.au*

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Secretary	John Bates	VK7RT
Treasurer	John Bates	VK7RT

Broadcast schedules

All frequencies MHz. All times are local.

VK1WI: 3.590 LSB, 146.950 FM each Sunday evening from 8.30pm local time. The broadcast text is available on packet, on Internet *aus.radio.amateur.misc* news group, and on the VK1 Home Page http://www.vk1.wia.ampr.org

Annual Membership Fees. Full $77.00 Pensioner or student $70.00 Without *Amateur Radio* $48.00

From VK2WI 1.845, 3.595, 7.146*, 10.125, 14.160, 24.950, 28.320, 29.120, 52.120, 52.525, 144.150, 147.000, 438.525, 1281.750 (* morning only) with relays to some of 18.120, 21.170, 584.750 ATV sound. Many country regions relay on 2 m or 70 cm repeaters. Sunday at 1000 and 1930. Highlights included in VK2AWX Newcastle news, Monday 1930 on 3.593 plus 10 m, 2 m, 70 cm, 23 cm. The broadcast text is available on the Internet newsgroup *aus.radio.amateur.misc*, and on packet radio.

Annual Membership Fees. Full $78.00 Pensioner or student $61.00. Without *Amateur Radio* $47.00

VK3BWI broadcasts on the 1st Sunday of the month at 20.00hrs Primary frequencies, 3.615 DSB, 7.065 LSB, and FM(R)s VK3RML 146.700, VK3RMM 147.250, VK3RWG 147.225, and 70 cm FM(R)s VK3ROU 438.225, and VK3RMU 438.075. Major news under call VK3ZWI on Victorian packet BBS and WIA VIC Web Site.

Annual Membership Fees. Full $78.00 Pensioner or student $61.00. Without *Amateur Radio* $47.00

VK4WIA broadcasts on 1.825 MHz SSB, 3.605 MHz SSB, 7.118 MHz SSB, 10.135 MHz SSB, 14.342 MHz SSB, 21.175 MHz SSB, 28.400 MHz SSB 29.660 MHz FM (rptr), 147.000 MHz, and 438.525 MHz (in the Brisbane region, and on regional VHF/UHF repeaters) at 0900 hrs K every Sunday morning QNEWS is repeated Monday evenings, at 19.30 hrs K, on 3.605 MHz SSB and 147.000 MHz FM On Sunday evenings, at 18.45 hrs K on 3.605SSB and 147.000 FM a repeat of the previous week's edition of QNEWS is broadcast. Broadcast news in text form on packet is available under WIAQ@VKNET QNEWS Text and real audio files available from the web site

Annual Membership Fees. Full $83.00 Pensioner or student $71.00. Without *Amateur Radio* $52.00

VK5WI: 1827 kHz AM, 3.550 MHz LSB, 7.095 AM, 14.175 USB 28.470 USB 53.100 FM, 147.000 FM Adelaide, 146.800 FM Mildura 146.900 FM South East, 146.925 FM Central North, 438.475 FM Adelaide North, ATV Ch 35 579.250 Adelaide. (NT) 3.555 USB, 7.065 USB, 10.125 USB, 146.700 FM, 0900 hrs Sunday. The repeat of the broadcast occurs Monday Nights at 1930hrs on 3585kHz and 146.675 MHz FM. The broadcast is available in 'Realaudio' format from the website at www.sant.wia.org.au Broadcast Page area.

Annual Membership Fees. Full $82.00 Pensioner or student $68.00. Without *Amateur Radio* $54.00

VK6WIA. 146.700 FM(R) Perth at 0930hrs Sunday relayed on 1.865, 3.564, 7.075, 10.125, 14.116, 14.175, 21.185, 29.120 FM, 50.150 and 438.525 MHz. Country relays 3.582, 147.200 (R) Calaby, 147.350 (R) Busselton, 146.900 (R) Mt William (Bunbury) 147.000 (R) Katanning and 147.250 (R) Mt Saddleback. Broadcast repeated on 146.700 at 1900 hrs Sunday relayed on 1.865 3.564 and 438.525 MHz country relays on 146.900,147.000, 147.200, 147.250 and 147.350 MHz. Also in "Real Audio" format from the VK6 WIA website

Annual Membership Fees. Full $67.00 Pensioner or student $61.00. Without *Amateur Radio* $36.00

VK7WI: 146.700 MHz FM (VK7RHT) at 0930 hrs Sunday relayed on 147.000 (VK7RAA), 146.725 (VK7RNE), 146.625 (VK7RMD), 3.570, 7.090, 14.130, 52.100, 144.150 (Hobart). repeated Tues 3.590 at 1930 hrs.

Annual Membership Fees. Full $85.00 Pensioner or student $72.00 Without *Amateur Radio* $52.00

VK8 Northern Territory (part of the VK5 Division and relays broadcasts from VK5 as shown, received on 14 or 28 MHz)

VK1 NOTES

Forward Bias

Peter Kloppenburg VK1CPK

What shall we do with all that old junk?

During the last 12 issues of 'Amateur Radio' we read in 'Silent Keys' the passing of 69 members. This number does not include Silent Keys who were not members of the WIA and never attended a local club meeting. They passed away quietly without us knowing anything about them

Maybe it is not a happy subject, but this piece of prose is aimed at the 'oldies' among us They have spent many years using old equipment with key and microphone, documentation, books, components and valves, sometimes to the despair of the XYL.

When such an amateur becomes a 'Silent Key' one day, she sighs 'What shall I do with all this junk?' Papers and old books are cleared and put in the 'Yellow' bin. Small pieces are put in a container somewhere. 'Gee, that's nicely cleared up. Now for those large pieces of equipment...'

Sometimes, someone remembers that the WIA exists: usually too late, because by that time much has already been lost. Often it is decided to call in a second-hand dealer who then clears out the shack. The moral of this story: Amateurs watch out for your gear!

Again: it is not a happy thought, but you could make it a lot easier for the XYL if you made an inventory, and in black and white let it be known what must happen to your gear when you are gone.

There are various possibilities, firstly, you can have your local amateur radio club collect all your gear and dispose of it at a sale, or have it advertised as 'Deceased Estate' in the AR journal.

Secondly, if the equipment is old, or, of historical value, it can be sold through the 'Historical Radio Society of Australia' or donated to a vintage radio museum

Thirdly, make a Will! That solves many problems and ensures that your Will is carried out. In these ways you can be sure that none of the gear is lost or falls into the wrong hands.

After all, you haven't collected all that gear over the years for nothing, have you? Translated from VERON's 'Electron' of March 1994

On a lighter note, the Farrer facility has been painted and most of the required furniture acquired. The fitout for the first year of operation is modest in equipment and planned activities After 12 months there will be an assessment to determine what changes are required.

However, one thing is clear The Farrer facility will be mainly used for Contests, Aspiring Radio Amateurs, JOTA operators, WICEN operators, and amateur visitors. More on this next month.

The next general meeting will be held on August 27, at the Scout Facility, Longenerong St, Farrer, at 8.00 pm Cheers.

VK7 NOTES

"QRM" Tasmanian notes

First, may I apologise for no Tasmanian notes last month, of course knowing full well how all our readers wait with bated breath to read them !!? I was out visiting my friend Jim, VK9NS

We welcome two new members this month, VK7JUF in Bellerive and also Mike Emery from our southern area who is studying hard for his licence.

As I write this two of our northern stalwarts, Barry, VK7BE and Al, VK7AN have been on Flinders Island (I.O.T.A OC195) working as VK7FLI from the QTH of Peter Blundstone, VK7KPB. These island W.I A. DX-peditions certainly bring the worldwide island seekers out in droves Congratulations to Barry and Al on a great job done. Pat and Peter are wonderful hosts and welcome all hams who come to the Island.

Two months ago I reported that thieves had broken into the Northwest branch's repeater of top of Mt. Duncan, stolen a solar panel and caused other damage.

Winter is now playing it's part and we are experiencing difficulty in getting the large storage batteries charged again. The 2 metre repeater is active but with a fraction of it's normal use while the 6 metre repeater has been switched off till the batteries charge up again.

We have now installed alarms on all sections of the site so that we'll all know immediately there is any more hanky-panky up there.

Our State Awards Manager states that we now have 601 recipients for the "Tasmanian Devil" award. Have YOU tried for this fine award yet?

August 4th and 5th sees our Southern WICEN members running the Command Net for the "Saxon Safari" – a gravel road rally over 240km through some of the toughest mountain and forest country in Australia. It's a daunting task for communications in this environment but our boys (and ladies) every year "deliver the goods"

At our last State Council meeting we decided the guide lines for "family membership" namely – One full membership (in whatever category the applicant requires) plus the federal component for each extra amateur living in the same household

We feel this is the fairest way to encourage all family members to join the W.I.A.

Cheers for now Ron Churcher, VK7RN.

VK4 Notes—QNEWS

from Alistair Elrick VK4MV

SUNFEST 2001

The Sunshine Coast Amateur Radio Club will be presenting the 2001 SUNFEST on Saturday September 1st at the Nambour High School commencing at 9am Admission will be just $3:00 or $5 00 for a family pass.

Table-space booking applications, phone Angus on 5443 2074 Tables will be $15:00 per 2 metres and open air or boot sales spaces $8.00 Firm bookings must be received by August 3rd.

One reminder will be on your application form which is very important, *Nambour High have insisted you bring carpet etc if you are putting gear on 'their polished floor!'* So be ready for that if you are going to sell any 'boat anchors'

The Sunshine Coast Club will be mounting Amateur Radio displays for the general public at 3 local Libraries this year. These will be at, Kawana 1st of August to 4th of September; Caloundra 4th of September to 3rd of October and in Maroochydore 8th of October to 20th of October

A good lead for all local clubs to follow, these displays could be both static and manned at various times for the duration, with plenty of contact details for club meetings. I hope there is a rush of interested people.

WICEN gets their exercise

The Gladstone clubs recent car rally was really tremendous, everyone who participated had a good day, even if it took over 2.5 hours getting home due to a lot of cattle on the road along with very thick fog. Then there was the severe storm with a great deal of lightning and thunder in the Kalpowar area adding a lot of interest!

Members of Mackay Amateur Radio Association ran the communications at a Horse Endurance Trial at Dennison Creek on Sunday the 27th May for the Mackay and Pioneer Valley Horse Endurance Club. Wally VK4AIV, George VK4HAN and Bruce VK4NPF ran communications on the 2-metre amateur band This was the first time that this site had been used. About 23 horse riders participated on a 100km ride and a training ride It ran from 5.00am till 4 00pm.

On Sunday 10th June the Horse Enduro in Twin Hills was supported by Bruce, VK4NPF and Wally VK4AIV from the Mackay ARA.

Wally VK4AIV organised the communications and operated at two checkpoints and Bruce VK4NPF operated another checkpoint using the 2-metre band in conjunction with UHF CB operators.

The ride started at 4.00am Sunday the 10th June and finished at 4.00pm. There were 100km and 60km rides where fourteen riders participated. Twin Hills is approximately 130km from Clermont on the Clermont to Charters Towers Road.

Sunshine Coast Amateur Radio Club has taken on a WICEN role. Dave VK4KDL recently showed the club a video regarding the Tsunami that hit New Guinea and caused mass destruction. The Club discussed their role and the availability of repeaters after cyclone's etc

Len VK4ALF told the meeting the tower the repeater antenna was on was unlikely to withstand a major cyclone. It was decided to apply for a licence for a new portable 438.175 UHF repeater for 'SARC WICEN' Do you wonder how your repeater would survive severe or cyclonic winds.

Mt Stuart TV Tower Update

More work than expected will be required to restore normal VHF/UHF broadcast television and radio services in the Townsville/ Thuringowa Region.

This work is required to repair damage caused by a spectacular fire on the Mount Stuart NTL Tower during February 2001. This ignited the fibreglass radome and melted the aluminium elements and coaxial cable in the UHF TV Array and caused considerable damage to the VHF TV and FM Array.

The cause of the fire has never been officially released, however those in the technical 'know' point to a power divider in the UHF TV array which was possibly damaged by a massive number of lightning strikes on Mount Stuart a few weeks prior to the 'towering inferno'.

FNNQARG from Far North QLD

One of VK4's premier Ham Social events occurred at Mission Beach on the weekend of 9th June Gavin VK4ZZ, a FNNQARG scribe says at least 57 attended.

Displays included 'Rock' Hudson's Radio Emporium, Navcom Electronics with Barry VK4TBD and help from Yoshi VK3BZX, brought along at least 4 crates of equipment and goodies for the display. Don VK4MC deployed the TARC ARDF beacons and Ron VK4BRG showed equipment designed for Amateur Radio Direction Finding.

Sunday night saw VK4ATV call into the North Queensland Net. Evie VK4EQ at Rosslea was net controller utilising club call VK4WIT and this was the first time the TARC Inc has communicated between its two club calls from different regions!

All 57 who attended FNNQARG could enter a free prize draw sponsored by ICOM Australia. The prize was an ICOM IC-Q7A Mega-Pocket-Rocket transceiver. The prize was drawn in the VK4WIT Communications Centre live on-air on the North Queensland Net by Yoshi VK3BZX and was won by Teri VK4HYL Teri couldn't believe she had won the prize, but fate was to make things even more amazing!

Everyone from far and wide had purchased tickets in a raffle sponsored by Navcom Electronics. The raffle prize consisted of a ICOM IC-Q7A Mega-Pocket-Rocket transceiver. Imagine the incredulous response from everyone when the winner was announced as Don VK4MC, XYM of Teri VK4HYL'

FNNQARG - cricket match umpire's report - South Mission Beach. 10th June 2001. It was the first year, for quite a few years, that the number of players for both Townsville and Cairns/Atherton teams were equal, having 19 players in each team

Of note too was that Yoshi and Hikaro from ICOM Australia had their first ever go at playing cricket, contributing well to the score of the Cairns/Atherton Team

73's from Alistair

AMSAT

Bill Magnusson VK3JT

AO-40 orbit finalised and stable

Peter DB2OS announced on 2001-Jun-22 that the first activation of the ATOS (Arcjet Thruster on OSCAR Satellite) propellant feed system was performed successfully during orbit #295.

Telemetry confirmed that the ammonia heater, the flow rate controller, valves and pressure indicators all worked appropriately. The time for the out-gassing was about 22 minutes and with the success of this first test, the rate was to be increased during further tests.

Much behind the scenes activity was carried out and a bulletin the following day said that the arc-jet thruster had again been testedfor about an hour on Orbit 296 from MA 118 to MA 135.

The S-band transmitter had been turned OFF from MA 100-180 to allow more power for the ATOS. The gas generator for the ammonia draws about 120 - 130 W of power when cycled on by the thermostat. The IHU-2 was left running during the tests and it logged telemetry into a circular buffer capable of holding about 2.5 days worth of data.

When the telemetry was downloaded from this hour-long "burn", it indicated a positive power budget and all looked nominal The thrust on orbit 296 started at MA 121 4 and lasted for 3618s. The acceleration was "guestimated" to be 54E-6 m/s², and the direction of acceleration is towards alon 274, alat –2, the attitude at the time of the tests.

Since everything went so well, the computer onboard AO-40 was commanded to initiate 2h "burns" starting around apogee on orbit 297 for the next three orbits. All telemetry looked good and it was hoped to expand to four-hour "burns" and possibly increase the thrust level as well.

The control team intended that before the "hot" arcjet firing with electrical power, the spacecraft attitude would be moved to a position that would favour good telemetry and communications. It was also hoped to test the 3-axis momentum wheels in the near future. The goal of the control team by doing these firings was to raise the perigee by about 200 km or so.

If you would like more information about the ATOS system, try the following URL:

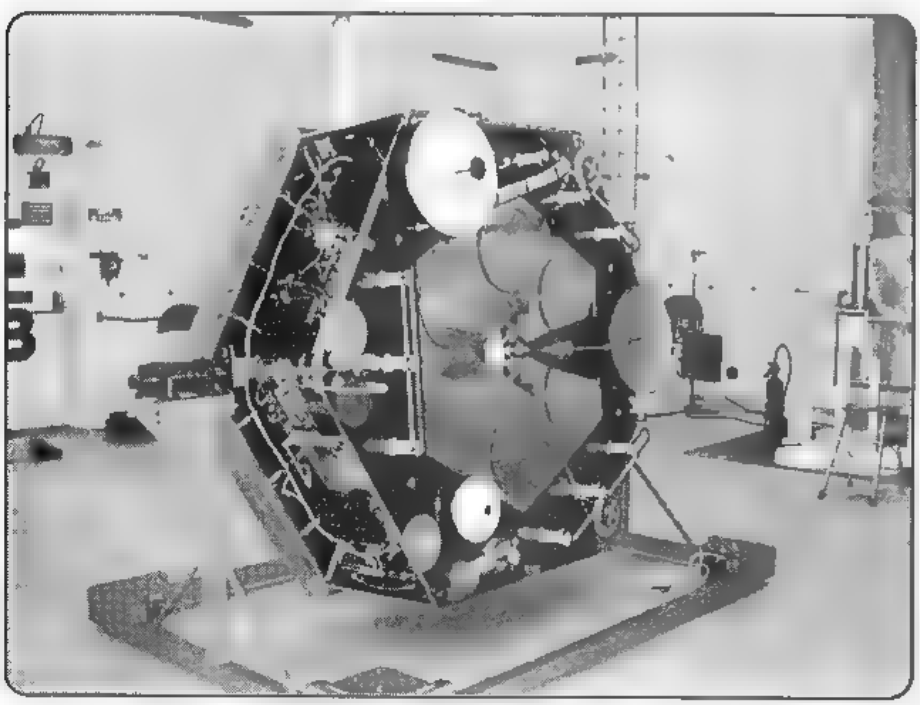
http://www.irs.uni-stuttgart.de/RESEARCH/EL_PROP/PROJ/e_atos.html

It was announced a few days later that the blowing of cold gas through the Arcjet had stopped and in fact all of the ammonia fuel had been exhausted

The perigee height had been raised from 280 km before the outgassing to 864 km after,the apogee height is almost unchanged. This is good news indeed as it confirmed that AO-40 is now in a safe and stable orbit!

Forward projections indicate that the orbit should be stable for at least 20 years. The perigee will oscillate between approx. 810 and 1260 km during that period, the mean motion (number of orbit revolutions per day) steadily decreases, and inclination varies from approx. 5 to 10.5 degs.

There is a graphic depicting the forecast on the AMSAT web page. The URL is included below



Phase 3d undergoing integration at Orlando

The AMSAT group in Australia.

The National Co-ordinator of AMSAT-VK is Graham Ratcliff VK5AGR. No formal application is necessary for membership and no membership fees apply. Graham maintains an email mailing list for breaking news and such things as software releases Members use the AMSAT Australia HF net as a forum.

AMSAT-Australia HF net.

The net meets formally on the second Sunday evening of the month In winter (end of March until the end of October) the net meets on 3 685 MHz at 1000UTC with early check ins at 0945UTC In summer (end of October until end of March) the net meets on 7 068 MHz at 0900UTC with early check-ins at 0845UTC All communication regarding AMSAT Australia matters can be addressed to

AMSAT-VK,
GPO Box 2141, Adelaide, SA. 5001.
Graham's email address is.
vk5agr@amsat.org

Should magnatorquing be required to alter the attitudein the future, the higher perigee will allow far greater control over this process The next major items on the agenda are the testing of the 3-axis stabilisation momentum wheels and the unfurling of the solar array.

This is real "rocket-science" and it has been an education for all to watch the triumphs and disappointments of the control team along the way so far. We wish them well for future operations to fully commission AO-40.

DIY Special..."S" band ... and how to get there on the cheap!

Recent transponder tests on AO-40 have indicated that the UHF and microwave modes are going to be popular on the new high orbit satellite.

Many international contacts were made, even with the satellite still being spin-stabilised and the squint angles far from optimum during much of the period.

"S" band or 2.4 GHz is not new to the amateur radio satellite service. AO-40 is at least the 6th amateur radio satellite to carry 2.4 GHz gear either in beacon or transponder form. The longest serving 2.4 GHz amateur presence in space is on UoSat-11. Launched in March 1984, its "S" mode beacon is still used by experimenters wishing to test out their 2.4 GHz apparatus.

Many amateurs regard anything above 144 MHz as the realm of the guru. This has been eased to a degree by the ready availability of off-the-shelf 435 MHz - and higher- transceivers in recent years.

Apart from ATV there has been little building of gear for this part of the spectrum. Little wonder then that frequencies like 1.2 and 2.4 GHz are held by many to be out of their league and far too techie. This mystery surrounding the "micro-waves" discourages many from delving into areas like "S" band.

Do not despair, dear reader, help is at hand. The advent of MDS (Micro-wave Distribution System) TV in Australia, and overseas has made available to us a source of redundant gear which is usually very cheap and in many cases, easily modified to our 2.4 GHz band.

The first substantial number of these units were the 'Drake' down-converters. Dozens of these little blue boxes were grabbed by the satellite community when they appeared a few years ago.

If you are still "sitting-on" one of them, modifications are fully documented and widely distributed on the internet and can be found by following the links from the AMSAT web site. The supply of Drake converters seems to have dried up

When I was in Adelaide recently Colin VK5HI showed me a unit, which is causing quite a bit of interest. It's known as the TransSystem AIDC-3733. It's a solid-state down-converter, which can be made to perform quite well in our 2.4 GHz allocation of "S" band. Purchase of these units can be arranged via Ebay.

Detailed modification instructions with excellent pictures are available at K5GNA's web site (all URLs at the end of this column). With a little work this unit can be turned into an excellent performer for use with AO-40.

It's very likely that, as in the transponder tests, the "V" and "L" band receivers will be activated with the "S" band downlink so the AIDC-3733 and similar devices will allow you to exploit these modes for very little financial outlay. A workable, entry level micro-wave receive system which can be used to feed your 2 metre SSB radio can be put together for about $150.

The web site shows the availability of an AIDC-3733 unit already modified and ready for use. Don't be afraid of the mods; they require no specialised test gear and can be carried out by anyone who can use a fine soldering iron. They are much simpler than the Drake mods and the end results are also better.

The down-converter is only part of the 2.4 GHz station. To complement it, a high-gain antenna is needed A long helical antenna or a small dish with a helix feed seems to be the best answer

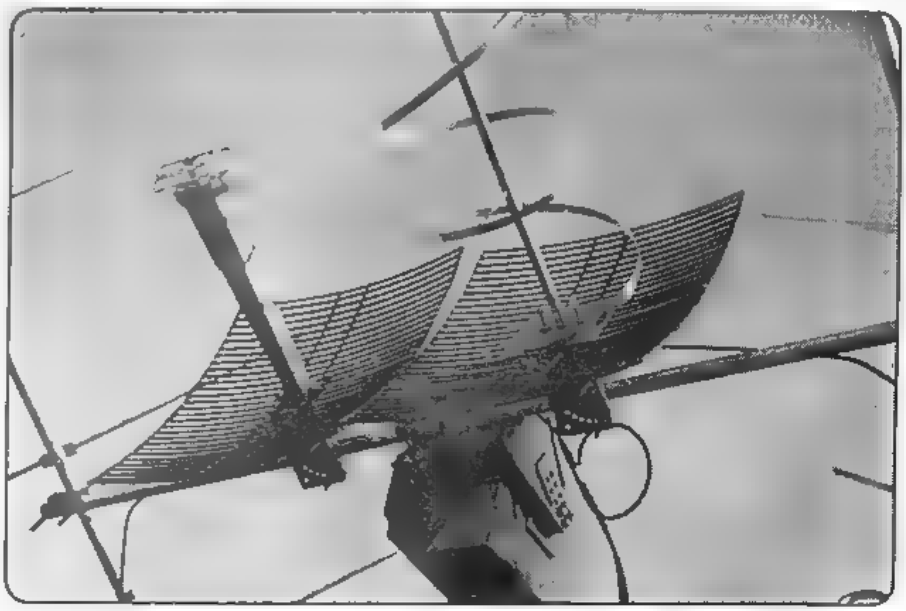
A dish of less than a metre diameter appears to be adequate for AO-40 reception. Such a dish, particularly of open mesh or "BBQ grill" type is easily mounted on just about any AZ-EL rotator system. Or, like mine, mounted on a tripod and hand-pointed.

A range of suitable dishes is available from the Australia-wide Hills organisation. Prices start at under $50 for the "BBQ grill" type of dish, which because of its "slat" construction works best with a linearly polarised feed Dishes more suitable for circular polarisation using (say) a helix feed will cost slightly more.

James Miller's excellent article describing his helix feed system is available by following the links on the AMSAT web site. James has been a mine of information on simple "S" band gear since the very early days and all his articles are worth a read

Handy-man tools and a couple of hours will construct such a feed at virtually no cost. Mine consists of an "N" type connector, a cut-down coffee can and a few turns of 3mm copper refrigeration tubing with a small piece of shim brass soldered on.

You can make your own mesh dish if you wish to and have a reasonably well equipped home workshop. I intend to



2.4 GHz Conifer, 70cm helical backed by conifer dish

cover this aspect in a future column.

Loop yagis and helix antennas are also worthy of consideration for 1.2 or 2.4 GHz. Construction articles abound in ARRL and RSGB publications and they do not require any specialised techniques or materials.

While most of the information referred to so far can be found on the Internet, don't forget about BOOKS! There are many good texts on the subject of amateur radio satellites and their microwave components. A technical bookshop or a larger amateur radio store should have a good range.

More interesting ways around the "S" band situation are coming to light as time goes on. I recently learned of two interesting alternative solutions, one from England and one from nearer home.

Howard Long G6LVB has a novel solution. He details how to modify an ICOM IC-R3 receiver to receive the "S" band signals. Briefly the IC-R3 will cover this band in its original state but it does not have SSB. Howard shows how to take the IF signal out and route it to the input of an HF receiver. Read about Howard's mods at his web site below.

Peter Ellis VK1KEP has kindly provided details of a project he is working on which shows great promise, see his contribution below.

A worthwhile project is a simple signal source for testing and alignment on 2.4 GHz. Until recently this has been a stumbling block for experimenters. Signals from the amateur satellites can be used as mentioned above. While a useful tool, they are not in your sky all the time, are weak signals and are really only suitable when you have most of the "bugs" ironed out of your system.

A parts kit for a 2.4 GHz signal source will be available shortly from AMSAT-UK. Graham, VK5AGR has suitable 3rd overtone crystals available now for $9 including postage for those wishing to use their own favourite circuit

When using a signal source to check the alignment of dish feeds remember that dish geometry expects a signal source to be an infinite distance away and produce parallel incoming rays. This is impossible to achieve. Even the Sun's rays are not *exactly* parallel!

It means that you should always have the signal source as far away from the dish as possible Preferably 10 to 20 times the dish diameter away. If you were to place the source just a metre or two in front of the dish you would get a significant error in placement of the dish feed apparatus.

So there it all is. You CAN do an "S" mode system on the cheap, and you don't have to be a techie to do the mods. Everything is available at reasonable prices and within the capabilities of the average amateur constructor. The dish, the feed, the down-converter.

With the help of Colin VK5HI and Graham VK5AGR, Rob VK3OS and now Peter VK1KEP, I have assembled a selection of recent articles on the subject of 2.4 GHz dish-feeds, helix antennas and down-converters, mainly gleaned from the AMSAT bulletin board. It's about 1.5 Mb in all. I will edit it down to fit on a floppie disc. If you contact me I'll arrange to get a copy to you.

Give it your best shot. AO-40 is showing a lot of promise and the more VK stations ready for it when full operations begin, the better

For late breaking news of AO-40 and all other AMSAT doings, check the web site or for the latest on developments in the 1.2 and 2.4 GHz areas, subscribe to the AMSAT-BB and join in the discussions. There is no greater reservoir of experience anywhere, newcomers are welcomed and given every assistance.

This is an area where the Internet excels, but don't forget about BOOKS!

Harvesting Antennas

from Peter Ellis VK1KEP

I recently had a close encounter with the 'Conifer II' ex-Galaxy TV 'direct broadcast' antennas, available in various Australian areas.

They are just right for picking signals off the new AO-40 AMSAT satellite When the new AO-40 satellite was launched, I realised that there were Conifer II antennas still on rooftops around Canberra, several years since Galaxy departed the scene, but they are still there for the asking.

Local Linux enthusiasts were using them for 2.4GHz links, replacing the electronics with a simple antenna of their 'air-modem', and that got me thinking. These "BBQ-grill" 18-21dB antennas look like a small "grid-pack" antenna seen at microwave link sites.

At around 50cm x 40cm stacking is a fair proposition if the feeder harness loss is kept reasonable. Otherwise a few extra dB becomes immaterial. They have a transverter from 2.4GHz to near the 70cm band built-in the plastic centre spike

I went around the neighborhood and 'harvested' some by wearing a big smile and saying something like, "It's only catching the wind rather than TV signals these days, but I can make use of it "

In a few Saturday afternoons, I had enough to share around. I've since seen them in various NSW and QLD areas early in 2001, and hope to have some of them available soon ex-Canberra from an Amateur in the electronics business

I again made acquaintance with Kerry Richens VK1TKR, an electronics technician. In an hour I discovered things about the Conifer II transverters that I would have been hard-pressed to discover in a lifetime He's refined his knowledge since then.

Principally, we discovered that the Conifer II can pass the AO-40 satellite pass-bands with quite reasonable

Continues foot of page 36

USEFUL URLS

Peter VK1KEP and Kerry VK1TKR advise that they have a "how-to" site established at www.geocities.com/peter-vk1kep/conifer.html

More details of the "Conifer" unit modifications from Kerry Richens' site: http://www.qsl.net/vk1tkr/

AMSAT-UK 2.4 GHz signal source kit: http://www.g0mrf.freeserve.co.uk/kits.htm

EBAY site for AIDC-3733 downconverters. http://cgi.ebay.com/aw-cgi/ebayISAPI.dll?ViewItem&item=1243439545

K5GNA's modification site for AIDC-3733 down-converters: http://members.aol.com/k5gna/AIDC3733mod'fications.doc

AMSAT-NA web site with links to just about every other site of interest to amateur rad'o satellite buffs: http://www.amsat.org

Good VK site for used equipment: http://www.vkham.com

Pre-loved gear within AMSAT-VK is also advertised from time to time by Graham VK5AGR on his mailing list To get on the list, which also includes news of kits and special parts, send Graham an email requesting that you be added to the mailing list at Vk5agr@amsat.org

Modifications to the ICOM IC-R3 receiver are on Howard Long's web site http://www.g6lvb.com/icr3mod.htm

Graphic showing AO-40's final orbit and predictions for the next 20 years. http://www.amsat-d..org/journal/AO-40_20yrs.g.f

AR Book Review

New Homebrew QRP Book

Radio Projects for the Amateur – Vol. 2

by Drew Diamond VK3XU

Review by an AR Contributor

Australia's answer to the late Doug DeMaw has produced another book that's bound to be sought after by QRPers and homebrewers worldwide.

A follow-up to the original *Radio Projects for the Amateur*, Drew Diamond VK3XU has once again come up with more plans for power supplies, transmitters, receivers, antennas and test equipment to whet the appetites of both new and experienced homebrewers. The content of the 132 page A4 sized book is mostly drawn from Drew's articles in the Australian *Amateur Radio* and *Lo-Key* magazines.

Radio Projects for the Amateur Volume 2 contains nearly thirty amateur radio constructional projects. Each project contains a schematic diagram, several photographs, diagrams of board layouts and two or three pages of text.

You won't find any 'one transistor wonders' amongst the projects described. These projects, though simple, are usually returned to the shelf once the novelty of fruitless CQs with a chirpy, rockbound, milliwatt transmitter has worn off. Instead, you will find projects of medium complexity that have a good chance of working when built and will provide many rewarding contacts. Attention has also been given to specifying readily obtainable parts; many receivers featured use the well-known NE602, 741 and LM386 chips. To avoid the hassle of making PC boards, most projects are constructed on 'paddy board'.

The book provides all the information necessary to construct several interesting QRP and QRP HF stations. It describes three power supply projects. Together these would meet most power needs of the average experimentally inclined amateur. The receiver builder is offered a choice of direct conversion and superhet designs, all using the ubiquitous NE602. Particularly novel is a 'binaural' direct conversion receiver, which is said to make the desired signal take up a position somewhere near the middle of the user's ears, while noise appears evenly spread. Both AM and CW transmitters are described, with an emphasis on 80 and 40 metres. These can be boosted by an easy to build linear amplifier that puts out 50 watts on all HF bands.

The emphasis is on HF projects, though a converter for six metres and an antenna for two metres is described. However the large number of test equipment projects included (wavemeter, dip oscillator, attenuators, inductance bridge, power meter, station monitor, SWR bridge and more) should still make the book useful for the VHF/UHF tinkerer.

Other information provided include workshop hints (cutting holes, making boxes, storing parts, antenna insulators, making chassis, etc), suggested reading and useful websites.

The reviewer has constructed (or borrowed from) several projects described in volumes one and two, including direct conversion and superhet receivers, 50 watt linear amplifier, VHF converter and an SSB transceiver. All have worked as advertised

The reviewer found the hand-drawn diagrams of good size and easy to read Photographs were reproduced satisfactorily. The book contains some minor spelling and typographical errors, but none that detracted from the worth of the projects presented. The stapled binding is similar to that used for Volume 1. This has stood the test of time in the author's shack.

Along with its companion volume 1, *Radio Projects for the Amateur Volume 2* is a must for any practically inclined amateur. Like volume 1, and classics such as Solid State Design and Amateur Radio Techniques, it will be so frequently referred to at VK3YE that it will probably spend most of its time off the bookshelf and on the bench!

Radio Projects for the Amateur - Volume 2 costs $24.95, posted anywhere in Australia. To order or to obtain further information, write to

Drew Diamond VK3XU, 45 Gatters Road, Wonga Park, Victoria, 3115, Australia.

■

AMSAT continued

signals, and transvert from 2401.xyz MHz down to 451.xyz MHz (same xyz numbers)

This means that the Conifer II can be used, virtually as-is, as an AO-40 transverter if you have a 70cm 'general coverage' receiver. An FRG-9600 or WinRadio are ideal

We think that the crystal frequency is multiplied by 256 to add to the IF (radio), but this is yet to be confirmed with precision If this is so then it should be possible to specify another crystal and place the IF at, say, 440 or 430MHz.

An 'arm-strong' az-el rotator might even work but the real thing is better. The Conifer II needs around 14-18VDC @ 3-400mA fed up the 75 ohm coax to feed the 'oven' (it gets quite warm!), with the signal stripped off on the return journey and fed into the receiver. There are several versions of these 'power inserters' available on the Web. Naturally, they are for receive, and you'll have to make separate arrangements with co-ax relays and timing circuits if you also want 70cm transmit

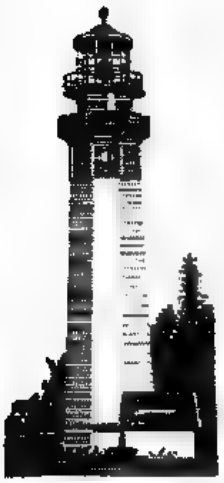
Many thanks to Peter Ellis VK1KEP and Kerry Richens VK1TKR for the above contribution which puts these mods and therefore S-band, AO-40 firmly within reach of all VK amateurs.

The list of the URLs boxed above come with a warning - my experience is that URLs are volatile things! These were all correct and active at the time of writing

■

DX Notes

Ross Christie, VK3WAC
19 Browns Road, Montrose 3765, Vic.
Email Vk3wac@aol.com



The International Lighthouse and Lightship Weekend runs over the weekend of the 18 and 19th of August.

The latest list of participating stations (the list can be found at http://vk2ce.com/illw/2001.htm) shows 193 registered stations so far and probably a whole lot more who haven't registered will be operating as well.

The list is quite comprehensive and gives the calls and locations of those stations that are planning for a great weekend of operating. Unfortunately, I am rostered on for work the weekend in question, but hopefully, I will be able to spend some time on the air and will manage to work a few.

Another group of stations to lookout for is the nine special event stations that will be on the air to mark the 17th Commonwealth Games being held in Manchester between the 25th of July and the 5th of August. The nine stations will be GB17CG, GB0CG, GB2CG, GB4CG, GB0MCG, GB2MCG, GB4MCG, GB5MCG and GB8MCG.

The nine stations will be operating from Manchester, England, as the count down starts for the 17th Commonwealth Games By all appearances this is a big event and the activity will cover all modes on all bands, so there should be something here for everyone. There is also a special award available and the basic rules are as follows,

- The period of the award begins on Wednesday 25th of July 2001 at 00 01 hrs GMT and finishes on Sunday the 4th of August 2002 at 00.00hrs GMT. No contacts before or after these dates will be counted.
- For stations operating outside the United Kingdom and Eire, at least 6 of the 9 special event stations must be heard or worked.
- All entries must be accompanied by log extracts on paper.
- Contacts by electronic mail will not be considered.

Full details on the radio event can be found at www.geocities.com/gbgames2002 [TNX WIA Vic Div]

One of the snippets from last months DX Notes was on the special event station 3Z0GI. Apparently I failed to mention why this was a special event. Actually, 3Z0GI was activated to celebrate the 666th anniversary of the founding of the Polish City of Gorowo Ilaweckie. If you were fortunate enough to work this station then the QSL route is via SP4CUF.

This month looks like a good month on the bands so lets get on the air and work some rare DX, a special event station, a DXpedition or whatever takes your interest.

The DX

3A, Monaco. Gerry, 3A/IZ1DSH will be active on 40, 20, 15 and 10 metres SSB from Monaco from the 4th until the 10th of August. QSL is via his home call, either direct or via the bureau. [TNX IZ1DSH and 425 DX News]

FR, Reunion Island. Carlo, I4ALU, lets us know that he will be operating from Reunion Island, dates are the 15th until the 28th of August. He anticipates being on all HF bands, CW only, as **FR/I4ALU/P**. QSL is via I4ALU, direct or via the bureau. [TNX The Daily DX]

GW, Wales. Ten operators from the North Wales Radio Rally Club plan to operate from **Bardsey Island (EU-124)** from the 5th until the 10th of August. They will be using the call **GW0NWR/P**. Activity will take place on all bands 160 to 6 metres.

The group plans to run the station for 24 hours a day. Operations will initially take place from the Bardsey Lighthouse for the first three days then relocating to Plas Bach, a farmhouse situated in the centre of the island for the rest of the trip. QSL is to GW0NWR via the bureau or direct to, GW0DSJ Edward Shipton, 34 Argoed, Kinmal Bay, Rhyl Conwy LL18 5LN, Wales [TNX GW0DSJ and 425 DX News]

I, Italy. A group of operators from ARI Trieste plan to operate as **IQ3V from Vittoria Lighthouse** during the International Lighthouse/Lightship Weekend. QSL to IV3LNQ via the buro or direct to Luigi Lenardon, P.O Box 3959, 34148 Trieste - TS, Italy or via the bureau. [TNX IV3LNQ and 425 DX News]

IS0, Sardinia. IS0AGY, IS0BMU, IS0CAK, IS0CPU, IS0GQX, IS0JOO and IW0USV plan to be active on all HF bands including 6 and 2 metres from **Isola Dei Ratti (EU-165)**. They have requested the callsign **IM0R** and are awaiting confirmation. Date of operations is the 3rd until the 5th of August QSL via IS0AGY [TNX IS0AGY and 425 DX News]

J49R, Crete. Roberto, I2WIJ, will be active from **Crete (EU-015)** from the 23rd of July until the 6th of August He plans to take part in the IOTA contest and will be active on the WARC bands the rest of the time. QSL via I2WIJ. [TNX The Daily DX]

OY, Faeroe Islands. Fred, DF2SS is planning an operation from the **Faeroe Islands (EU-018)** between the 20th of July and the 8th of August. He expects to be active on all HF bands and 6m, on SSB, CW and RTTY. [TNX The Daily DX and 425 DX News]

S2, Bangladesh. John, KX7YT, says that he will be operating as **S21YV from Dhaka** between the 15th of July and the 15 of August. He expects to be active daily around 14:00 to 18 00 UTC on 15 and 20 metres QSL via KX7YT [TNX K2FRD and 425 DX News]

VO2, Canada, Zone 2 Fred, K2FRD reminds us that he is operating as **VO2/K2FRD** from the Canadian Zone 2 If all is going as planned the operation will

continue until the end of August. He will be living and operating from a tent about 90km from the nearest town.

Fred hopes to be on the air at least six hours a day operating SSB and CW on all bands from 40 to 10 metres. Activity from Zone 2 is relatively rare; so if you want to work a station from this zone then check out Fred's schedule at http://sites.netscape.net/thefred3/labr1. QSL to K2FRD direct only, Fred Stevens, 263 Keach Rd, Guilford, NY 13780, USA. [TNX K2FRD and 425 DX News]

IOTA Activity

EU-110. 9A, Croatia. Sven, DF9MV, George, DL1GEO; Chris, DL9CHR and Fredy, DE0MST, will all be active as 9A/ home call from **Porer Island (EU-110)** from the 12th until the 17th of August. QSL via DE0MST either direct to Fredy Stippschild, P.O. Box 1406, D-83657 Lenggries, Germany or via the bureau. [TNX DE0MST, Islands On The Web and 425 DX News]

NA-053. Trinity Islands. Richard, KL7AK; Jim, K9PPY; Larry,KF6XC and Bob,WL7QC will be operating as KL7AK from Sitkinak Island in August. They plan to be on the island from the 9th until the 14th of August (approx.).

The main station will be running an amplifier and a tri-band beam (10/15/20m) mounted on a 30 foot mast. The group will favour 14260kHz +/- QRM. CW QSO's will only be by request and pileups permitting. QSL via N6AWD. [TNX G3ZAY, KL7AK and 425 DX News]

EU-015. SV9, Crete. Ron, WB2GAI, plans to be active on 10 to 160 metres, CW only, as SV9/WB2GAI/P between the 29th of June until the 12th of August. QSL via WB2GAI. [TNX WB2GAI and 425 DX News]

EU-133. Gogland Island. Club station RZ1AWD will be operating as **UE1CIG** from Gogland Island between the 23rd of July and the 5th of August. QSL via RN1AW (direct) or RZ1AWD (bureau). [TNX RZ1AZ and 425 DX News]

UA, Barents Sea Islands. Mike, UA1QV, Yuri, UA1RJ, and a group of other operators are planning to be active, if the weather permits, from a number of the Barents Sea islands. Activity will take place between the middle of July until the middle of August

Two stations will be set up complete with amplifiers and Beams from each of the following locations;

- **RI1PBZ Bolshoj Zelenets EU-086 RRA 03-07**
- **RI1PCH Chaichij [*] RRA new**
- **RI1PCO Chaichii [*] RRA new**
- **RI1PDO Dolgy EU-086 RRA 03-10**
- **RI1PGO Golets EU-086 RRA new**
- **RI1PKO Kashin [*] RRA new**
- **RI1PMZ Malyj Zelenets EU-086 RRA new**
- **RI1POD Dolgy EU-102 RRA 03-08**
- **RI1POL Lovetskij EU-102 RRA new**
- **RI1POP Pesyakov ——— RRA new**
- **RI1PRO Rvanye [*] RRA new**
- **RI1PSO Sengeyskij EU-188 RRA 03-06**
- **RI1PZO Zeleny EU-102 RRA 03-11**

[*] = IOTA status is still to be confirmed. If qualification criteria are met these islands should be acceptable for IOTA EU-102.

Special Events

Mike, GM4SUC, would like to remind everyone that the **International Lighthouse/Lightship Weekend** will take place from 0001z on **Saturday, 18th until 2359z on Sunday, 19th of August.** Over 193 stations have confirmed their participation from either a lighthouse, lightship or maritime beacon. You can find a comprehensive list of stations at the following Internet site: http://vk2ce.com/illw/2001.htm [TNX GM4SUC and OPDX]

Special event station, II4ARI, is on from Torino (Turin), Italy until the 28th of October. This event is called "Experimenta 2001."

Further details can be found at http://www.experimenta.to.it QSL via I1JQJ. [TNX I1JQJ and 425 DX News]

For the 'award chasers' amongst us. **The special call ES8SC** will be on air until the 31st of August for the **"Summer Capital Award".**

More details can be found at http://www.ppnet.ee/sc_award.htm [TNX ES8AS and 425 DX News]

DXpeditions

Steve, VK6VZ, sent me an Email about a DXpedition to the South Pacific by his friend Trond, LA9VDA. Apparently a group of Norwegian amateurs will be operating from **Market Reef** between the 5th and 8th of August.
Operators will be Arne, LA3IKA, Bjorn, LA5UKA, Paul, LA6YEA and Trond, LA9VDA. **Callsigns will be OJ0/LA3IKA** etc. Activity will take place on all bands 160 – 2 metres, SSB, CW and RTTY QSL via homecalls except for LA6YEA which is via LA9VDA [TNX LA9VDA and VK6VZ]

TY, Benin. Flo, F5CWU; Terry, F5MOO and F5AOV are planning a trip to Benin in West Africa.

The expected dates of operation is from the 11th until the 29th of August The group hopes to be active on all bands 160 to 6 metres on SSB, CW and digital modes. They are currently awaiting the issue of their licences from the Benin authorities and until then they are unsure which bands will be activated.

They have also invited requests from DXers for required bands, modes etc. E-mails can be sent to F5CWU at f5cwu@wanadoo.fr to organise a sched, they can also be found at http://perso.wanadoo.fr/f5cwu [TNX F5CWU and 425 DX News]

Round up

Gwen Tilson, VK3DYL, sent me and Email to let me know that the **QSL manager** for the recent YL expedition to OH0, **Aland Island, is OH1MK** A special feature of this operation is that all direct QSLs will be answered directly from the Aland Islands using attractive Aland postage stamps.

Keep an ear open for **Dusan, S52N**, who has been posted to duty with the UN peacekeeping forces in the **Golan Heights, YK**. He expects to be there for a year and has already applied for a Syrian license.

OA, Peru. The planned operation from **San Lorenzo Island, SA-052**, has been postponed until August –September due to problems with the local bureaucracy and transport Further information will be posted as it comes to hand [TNX OA4AHW and 425 DX News]

Pierre, HB9QQ, plans to be back in the **Maldive Islands** in the last week of October and the first week of November He will be operating as **8Q7QQ from Gan Island**, which is approximately 250 kms south of the equator Activity will mostly be on 6 metres using a 4 element wide-spaced yagi and an Icom 746 running 100 watts

When 6 metres is closed he will try and get on 10, 12, 17 and 30 metres CW Keep an ear on 28885kHz. [TNX HB9QQ and The daily DX]

CX, Uruguay Anyone who needs a

contact from Uruguay on the 80 and/or 160 metre bands should keep an ear open for **Geo, CX1SI and Al, CX4SS.** These stations are often on 80m between 00.00 and 02 00 UTC and on 160m between 02.00 and 03.30 UTC. [TNX CX1SI and 425 DX News]

VP8, South Georgia Island (and possibly South Orkney Island as well!). A report in OPDX recently from Mike Gloistein, GM0HCQ (who was active from South Georgia Island as VP8SGK for a few days during the end of March and the beginning of April). Mike says that he will be returning to South Georgia some time in late November or early December.

He will be operating from onboard the Royal Research Ship *Ernest Shackleton* from about the 10th of October onwards. He also anticipates a trip to the Falkland Islands and if so will change his callsign to VP8CMH/MM while there and in Antarctic waters.

Mike also says that there is a slight chance of some activity from Signy Island as well, however he won't know for sure until the ship itinerary is completed. While the ship is underway Mike will try and keep us posted of any changes on his web site at http://www.hfdx.co.uk [TNX GM0HCQ, OPDX and 425 DX News]

The Old Barney Amateur Radio Club has announced a **Special Event operation** celebrating the anniversary of **"National Lighthouse Day"**. The callsign **N2OB** will be active from "Old Barney" the Barnegat Lighthouse located on **Long Beach Island (NA-111)** New Jersey on the 4th and 5th of August.

The station will be on air from 1300 till 2300 UTC daily. Listen around 7280, 14280, 21380, 28480 kHz QSL via N2OB, P.O. Box 345, Tuckerton, NJ 08087 USA.

Send a SASE measuring 9"x12" with sufficient postage for a QSL card and certificate, alternatively an SAE and an IRC for a QSL card only

Another operation from The Old Barney A.R.C. Special Event operation for **the 'International Lighthouse Activity Weekend'. Callsign W2T** will be on air from the **'Tucker's Island Lighthouse'** in the Tuckerton Seaport, Tuckerton, New Jersey from 1300UTC the 8th of August through until 2300UTC on the 19th of August.

Listen around 7280, 14280, 21380, 28480 kHz QSL via N2OB, P O. Box 345, Tuckerton, NJ 08087 USA. Send a SASE measuring 9"x12" with sufficient postage for a QSL card and certificate, alternatively an SAE and an IRC for a QSL card only.

NIST Survey

I have mentioned this survey before but thought a reminder would be in order. Many amateurs use stations WWV and WWVH for the latest solar numbers, frequency calibration and as a time standard. The National Institute of Standards and Technology (NIST) is conducting a survey on the stations current activities and services.

I have been told that many amateurs from all over the world have completed the survey. WWV and WWVH are valuable resources for those amateurs who do not have access to the latest solar figures on the Internet, so perhaps we can make the NIST aware of both stations worldwide utility.

If you have Internet access go to http://www.timesurvey.nist.gov and complete the survey. The survey closes on the 30th of September 2001.

The BBC discontinued their short-wave broadcasts to North America, Australia, New Zealand and the Pacific on the 1st of July 2001. The BBC did this to save approx. 1 million pounds, money that is desperately needed for broadcasts to other audiences

You can still hear the BBC on the Internet (byte-barf is nothing like an analogue interference mode) and on commercial FM stations that carry the BBC; but to me it will just not be the same

I listened to the BBC when I was homebrewing equipment on the workbench and got used to the heterodynes, fading and multi-path distortion.

The BBC will continue HF broadcasting to Asia and Africa and other areas where the Internet is not so easily accessed.

Sources

Again this month we have a number of people and organisations to thank for the information that makes up DX Notes. Our thanks go to the following: VK3DYL, GM0HCQ, CX1SI, HB9QQ, OA4AHW, F5CWU, LA9VDA, VK6VZ, ES8AS, I1JQJ, GM4SUC, UA1RJ, UA1QV, RZ1AZ, WB2GAI, G3ZAY, KL7AK, DE0MST, K2FRD, IS0AGY, IV3LNQ, GW0DSJ, 1Z1DSH, The Old Barney A.R.C, WIA Vic Div, Islands On The Web, OPDX, 425 DX News and The Daily DX.

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Club Notes

Adelaide Hills Amateur Radio Society

The June meeting heard all about cells and batteries. The talk was given by Geoff VK5TY, President of AHARS.

He had some very interesting statistics to present to the members, one of which confirmed most people's suspicions. If you want the most expensive energy use ordinary Leclanche cells.

If you use a standard 6-volt lantern battery you will be paying $147 per kilowatt/hour, compared with approximately 14.7 cents per kilowatt/hour from the mains.

He also explored the difference between Leclanche cells and alkaline cells and explained in depth the application of the alkaline filled nickel/iron storage batteries for use by amateurs either to replace a power supply or a lead/acid storage battery to run equipment in the shack.

There is no regular meeting in July each year as AHARS has a Mid-year Dinner instead. Despite some problems this year this will still go ahead as usual, but at a different venue

If you are in Adelaide for the third Thursday of August, or of most months, please make your way to the Blackwood High School in Seymour Avenue, Blackwood where the regular meetings are held.

They start at 7 30 but people tend to arrive before that time

Everyone is most welcome

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Awards

John Kelleher VK3DP, Federal Awards Officer
4 Brook Crescent, Box Hill South Vic 3128 (03) 9889 8393

This is my final submission for the awards column. I thank you for your assistance and for your courtesy and patience over the past ten years. For me, in the beginning, it was a challenge, but it soon became a pleasure to find relevant awards for publication, and to maintain current DXCC listings.

From a recent email, I find that the ARRL is not accepting eQSL's. Possibly more on this subject in the future.

Information for those who worked EM0HQ, on the 14/15 July. The Ukranian Amateur Radio league were active from their headquarters, using the above callsign. The station location was Lisichansk City. Team leader was Vladimir, UX2MM. QSL Manager was UR5EAW.

A free award was available for working this special station, with no application to submit.

The rules were simple.

1. Work EM0HQ during the world championships.
2. For DX stations, 2 QSO's, any mode.
3. For European stations, 4 QSO's, any mode.

The award application is the log of EM0HQ. All awards will be sent via the bureau. For any further information, send an email to - em0hq@qsl.net

USA—New Jersey All County Award

Sponsored by the Jersey Shore ARS for working all New Jersey Counties. A basic certificate will be awarded upon your application showing proof of working 7 NJ Counties. Seals available for 14 and the full 21 counties. The NJ counties are :- Atlantic, Bergen, Burlington, Camden, Cape May, Cumberland, Essex, Gloucester, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Ocean, Passiac, Salem, Somerset, Sussex, Union, and Warren.

GCR list and fee of US$1.00 or 3 Irc's to - Jersey Shore A.R.S., P.O. Box 295, Toms River, NJ 08754-0295.

Indonesia - Worked All Indonesia Award

Issued for contact with stations in each of the Indonesian call-areas 0-9 as follows.

DX stations other than those in CQ Zone 28 need two stations in each area. Modes or Bands may be mixed. SWL OK. Contacts after 7 Sept 1968. GCR list and fee of US$8. Go to :-

Mr. M. Maruto YB0TK, PO Box 6763-IKSRB, Jakarta 12067, Indonesia.

73, Good luck, and Goodbye.

de John, VK3DP

DXCC Listings WEF July 4 2001

SSB Roll of Honour

VK3EW	334/340
VK5MS	333/387
VK4LC	333/380
VK5WO	333/365
VK6LK	333/358
VK6HD	333/358
VK3QI	333/347
VK3AKK	333/346
VK3DYL	333/339
VK2FGI	333/339
VK4UA	331/345
VK1ZL	331/337
VK4QH	330/337
VK2AVZ	329/340
VK3CSR	329/338
VK2DEJ	329/335
VK6NE	328/344
VK3YJ	326/332
VK4AAR	325/329
VK7BC	324/329
EA3AKN	323/331
VK3AMK	321/340
VK5EE	321/327
VK6VS	319/323
VK5FV	319/322

SSB Ordinary List.

VK6AJW	312/317
VK3JI	310/325
VK6APK	310/315
VK5WV	306/328
VK6PY	306/312
VK4LV	305/307
VK6RO	304/310
VK6ABS	304/
VK4ICU	303/305
VK3IR	302/308
VK4SJ	300/301
VK1TX	300/
VK6DY	294/301
VK4DP	293/305
VK2WU	291/298
VK4BG	286/302
VK3CYL	282/288
VK4EJ	275/277
VK3DP	274/277
VK7TS	270/271
VK4BAY	268/271
VK3GI	263/267
VK4AO	263/
VK3VQ	259/276
VK3UY	259/261
VK6ANC	258/262
VK5IE	258/261
VK2HV	253/
VK2UK	252/256
VK3CIM	250/254
VK2PU	243/247
VK6YF	238/241
VK8KTC	231/233
VK6APW	228/229
VK3ETM	226/227
VK8AM	225/
VK3SM	222/242
VK5BO	217/222
VK3DD	213/217
VK4IL	212/
VK4XJ	204/216
VK3DVT	201/204
VK2CA	201/
VK3EFT	198/201
PY2DBU	195/197
VK2FHN	190/
VK7JAB	186/
G0VXX	184/
VK6WJH	183/
WA1MKS	171/
VK6APH	168/169
VK4CHB	167/168
VK2BQS	164/167
LU5DSE	161/
VK4ARB	159/160
VK4IT	154/155
VK2GSN	152/
VK4BP	148/
VK7LUV	148/
VK2SPS	141/143
VK6LC	139/140
VK3DQ	133/147
VK2LEE	130/132
TI2YLL	127/
VK4VIS	126/128
YC8EMH	126/127
TG8NE	125/
VK2EJK	124/
SM6PRX	121/126
HL4YD	118/119
VK2MH	116/118
VK7WD	115/116
VK5GZ	113/115
VK6NV	111/113
JA8XDM	111/
C21DJ	109/
VK3MRG	108/
JE9EMA	108
VK5UO	107/110
HC2HYB	106/107
VK4LW	105/
JN6MIC	103/104
ZS6IR	102/104
KB2NEK	102/103
C21NJ	102
VK2FZR	102
JH3OHO	101/103
VK2EJM	101/103
VK3KTO	101/102
VK1PRG	101/
VK2IRP	100/101
ON4BCM	100/

Roll of Honour CW

VK6HD	333/354
VK3QI	333/345
VK5WO	326/342

Ordinary List CW

VK3KS	307/335
VK4LV	293/300
VK4ICU	291/
VK3JI	274/299
VK3AKK	270/275
VK4KU	251/
VK7BC	246/255
VK6MK	246/249
VK2CWS	244/246
VK3DP	244/246
VK4DA	237/239
VK3DQ	234/261
VK3CIM	228/229
VK4DP	205/216
VK7TS	204/
VK7RO	201/204
VK5GZ	197/199
VK6PY	190/194
VK6HW	179/182
VK5JO	165/166
VK5BO	159/184
VK4XJ	150/163
WA5VGI	146/148
VK4UA	143/145
VK4AAR	142/144
VK8AM	138/
VK7DQ	131/132
VK2BQS	124/126RTTY
VK2TB	123/125
VK7CQ	120/122
DK6AP	120/
SP1AFU	112/113
K5QNM	110/113
VK5BWW	110/113
VK6NV	109/110
OK1FED	109/
VK2FYM	106/108
VK4CXQ	106/
UR5BSJ	103/105
VK3DG	102/
SM6PRX	101/102

Roll of Honour Open (Mixed)

VK7BC	334/343
VK4LC	333/380
VK5WO	333/369
VK6HD	333/360
VK3QI	333/348
VK4UA	331/347
VK2AVZ	329/340
VK3AKK	327/388
VK4AAR	327/331
VK3UY	324/330
VK3JI	322/351
VK6AMK	322/341
VK4LV	315/319

Ordinary List Open

VK4DV	312/317
VK4ICU	311/313
VK6RO	310/316
VK4DP	309/323
VK3DP	305/309
VK4BG	293/312
VK7TS	285/286
VK3CYL	282/288
VK3VQ	274/291
VK3CIM	274/278
VK5BO	264/302
VK6ANC	261/265
TF5BW	260/264
PY2DVU	254/259
VK6MK	253/256
VK2HV	253/
VK2CWS	250/252
VK5UO	248/250
VK3DQ	246/275
VK6APW	239/240
VK2ETM	238/240
VK4DA	237/239
VK8AM	236/
VK4XJ	233/249
WA5VGI	216/218
VK5GZ	204/206
VK2EFT	202/205
VK2FHN	193
VK2BQS	181 184
VK4CHB	177 179
VK6APH	171/172
9A4KA	168/
SM6PRX	162 169
VK3VB	153 165
VK6LC	142 144
VK4EZ	129/138
YB8GH	127 129
VK3OZ	126/127
VK7CQ	123/125QRP
SP1AFU	114/115
VK3MRG	109/
VK2AJE	100/

Brenda Edmonds VK3KT

Waiting for results of exam structure discussions

The response to the ACA Discussion paper "Amateur and Marine Operator's Examination and Certification Requirements" has now been completed and submitted to the ACA by the extended deadline of 13th July.

A considerable amount of discussion was generated by this paper and the 26 questions that it posed. It is anticipated that the results of the discussion, when collated, will provide the ACA with direction as to how to proceed with the further devolvement of the examination process.

From conversations with ACA officers, I expect that the next step will be for the ACA to circulate a paper on the examination protocols developed as a result of this paper, and an invitation to express interest in managing the devolved examination system.

The WIA has intimated to the ACA that it does not see any way in which increasing the number of examining bodies will either increase the reliability and efficiency of the examinations or decrease the costs. In fact, we see the most effective form for the examinations to be a modification of the system currently in place, ie the WIA Exam Service. We are, however, prepared to relieve the ACA of the administration involved in the issuing of Certificates of Proficiency. We now await further moves from the ACA.

The WIA is also considering a proposal for a new entry level to amateur radio, - a level lower than the current Novice Limited - which would allow supervised or "Black Box" operation on a limited range of frequencies. It has been represented to us that an entry at this level would appeal to many of the young candidates who currently see the study required for a Novice licence as too formidable. If they can get on air easily and quickly, then the experienced operators can coach them in proper operating techniques and encourage them to achieve a higher level of licence. We do not see this entry level as exam-free. There would still need to be an examination to satisfy the national and international requirements for operators to be qualified. The examination though, could comprise only regulations and very basic safety, interference and propagation topics.

We are aware that there are currently 5 licence levels. However, it seems very likely that this number will be reduced to two when the CW section ceases to be mandatory.

If this is what it takes to restore the amateur numbers and enthusiasm it may be well worth while. I have long been an advocate of closer supervision of new licensees by experienced club members or similar mentors. This proposal assumes a fairly close liaison between newcomers and experienced operators.

AR Contests

Contest Calendar August – October, 2001

Aug	4	Waitakere Sprint	(CW)	(June 01)
Aug	4	European HF Championship	(CW/SSB)	
Aug	4/5	Ten-Ten Summer QSO Party	(SSB)	
Aug	5	YO DX Contest	(CW/SSB)	
Aug	11/12	Worked All Europe DX Contest	(CW)	(July 01)
Aug	18/19	SEANET DX Contest	(All)	
Aug	18/19	Remembrance Day Contest	(All)	(June 01)
Aug	18/19	Keymen's Club of Japan Contest	(CW)	(July 01)
Aug	25/26	ALARA Contest	(CW/SSB)	(May 01)
Sep	1	CCCC PSK31 Contest		
Sep	1-2	All Asian DX Contest		
Sep	8/9	Worked All Europe DX Contest	(SSB)	(July 01)
Sep	15/16	Scandinavian Activity Contest	(CW)	(Aug 01)
Sep	22/23	CQ/RJ WW RTTY DX Contest		(Aug 01)
Sep	22/23	Scandinavian Activity Contest	(SSB)	(Aug 01)
Oct	6/7	Oceania DX Contest	(SSB)	
Oct	13/14	Oceania DX Contest	(CW)	
Oct	20/21	Worked All Germany DX Contest	(CW/SSB)	
Oct	20	Asia-Pacific Sprint	(CW)	
Oct	27/28	CQ WW DX Contest	(SSB)	

Greetings to all contestants and interested readers. Well , THIS IS THE MONTH when VKs take a serious interest in contests . While this limited contest activity is very sad, it is the way you are. We need you all in our contests, not just at RD time, but in all the local events!! Full details of these appear in this column each month

This month is RD month (see Rules in June "AR") AND the revised date of the ALARA Contest (see rules in May 2001) Both of these are important Australian contests. *Please support them.* The dates are in the Calendar associated with this column Please prepare your station now and please do not forget to *send in your log*. It is most disheartening to Contest Managers to learn that several hundreds of stations took part in a contest, but only about 30 bothered to send in a log. What is the problem? Would you like assistance with your log? Please tell me if I can help in any way.

August is not far from October when the annual OCEANIA DX CONTEST is held (formerly VK/ZL DX Contest). By now you have seen the results of last year , with sincere thanks to our Editor for his good job in the June edition and Brian Miller, the ZL Contest Manager for 2000, who did a mammoth job of receiving, checking, collating and publishing the results.

Now is the time for you to get into gear for this most important Australian event Seriously, WE NEED YOU ALL to take part in this, even if for just a short time Apparently you do not believe or do not care that there are other operators in the world who are happy to work us "down-unders", not only in this contest, but at any time. Please don't let them down, or the name of VK either

73 and good contesting. Ian Godsil VK3VP vk3vp@vkham.com

Ian Godsil VK3VP re-appointed Federal Contest Co-ordinator

Ian held the post from 1998 until September last year, when he resigned after considerable criticism was levelled at him over various aspects of contesting in VK-land.

In the interim, Ian has studied modern contest logging programs and now uses one for most of his contest work. Also during this interim period, he has continued to supply notes for this column.

Ian asks that you keep him informed of all contest-related information. He may be contacted by e-mail at: ianvk3vp@telstra.easymail.com.au. His postal address is: 57 Nepean Highway, Aspendale, 3195.

Scandinavian Activity Contest

CW: 16—17 September

Phone: 23—24 September 1200z Saturday—1200z Sun

Object is for amateurs world-wide to contact as many stationsin Scandinavia as possible, on **bands** 80—10m (no WARC) Scandinavian **prefixes are.** LA/LB/LG/LJ (Norway), KW/JX; OF/OG/OH/OI (Finland), OF0/OG0/OH0 (Aland Isl); OJ0 (Market Reef); OX/OY; OZ/

5P (Denmark); SI/SJ/SK/SL/SM/7S/8S (SWEDEN), TF

Categories (all bands only) are single operator, single operator QRP (max 5 w o/p); multi-operator single transmitter, SWL.

Exchange: RS(T) plus serial number starting at 001. For each QSO,

Score one point on 20, 15 and 10 m, and three points on 40 and 80 m.

Multiplier is the number of call areas (0—9), not prefixes, for each Scandinavian country worked on each band. Portable stations without a district number count as area 0, eg G3XYZ/LA counts as LA0. OH0 and OJ0 are separate call areas.

Final score is total QSO points (all bands) times total multipliers (all bands).

Use standard format for logs and summary sheets. Show duplicate QSOs with 0 points.

Dupe sheets are required for 200+ QSOs.

Send separate logs for CW and phone sections. Logs on 3.5" DOS disc are welcome and must be in ASCII, one QSO per row, and labelled with the call, contest name, section/s and contest date. Include an SASE if you want your disc returned.

Summary sheet must be on paper. The mailing address alternates between SSA (Sweden), NRRL (Norway), EDR (Denmark) and SRAL (Finland) in that order. For 2000,

Send your log postmarked by 31 October to: J-E Rehn, Lisatael 18, SE-863 32, Sundsbruk, Sweden, or by e-mail to: <*sac@contesting.com*>

The winners trophy, and certificates for '1ST VK' and '1st Single Operator Phone', being presented to VK3EW (David McAulay - on the right), from the Contest Manager (Bruce Renn - VK3JWZ)

CQ/RJ WW RTTY Contest

23 - 24 September, 0000z Sat —2400z Sun

In this contest, the **object** is to contact as many stations world-wide as possible using digital modes [Baudot, ASCII, AMTOR (FEC and ARC) and packet] on **bands** 80-10 m. No unattended operation or operation through gateways or digipeaters, etc. Stations may operate for full 48 hours.

Categories are: single operator unassisted, single and multi-band; single operator assisted, all band; multi-operator single Tx, all band ("10 minute" rule applies to this category EXCEPT that one - and only one - other band may be used during the 10 minute period if, and only if, the station worked is a new multiplier); multi-operator multi-Tx, all band. Single operator entrants can enter the low power section (up to 150 W) or high power (more than 150 W).

Stations may be contacted only once per band, regardless of the mode used.

Exchange: RST plus CQ zone; W/VE will send RST, state or area, and CQ zone.

Score: one point for each QSO with stations in your own country, two points for each QSO outside your own country but inside same WAC continent, and three points for each QSO with stations outside your own continent. On each band the multiplier equals the sum of US states (Max 48) and Canadian areas (max 13) PLUS DXCC countries (including W and VE) PLUS CQ zones (max 40). Note: KL7and KH6 are claimable as country multipliers only, not state multipliers. Canadian areas are VO1, VO2,VE1 (NB), VE1 (NS), VE1 (PEI), VE2, VE3.VE4, VE5, VE6,VE7, VE8, VY

Final score equals total QSO points times total multipliers from all bands.

Submit a single summary sheet including scoring calculations for all bands, plus for each band a separate log, duplicate ckeck list, and multiplier check sheet

Send low power logs postmarked by 1 December to: , CQ WW RTTY Contest Director, Box DX, Stow, MA 01775, USA. Low power logs may be sent by e-mail to k1ry@contesting.com

Send high power logs to Ron Stailey K5DJ, CQ/RJ RTTY Contest Co-Director, 504 Dove Haven Drive, Round Rock TX 78664-5926, USA High power logs by e-mail to, k5dj@contesting.com

A comprehensive range of plaques and certificates is offered.

Complete Results –

(Points Scores):

2001 VK/Trans-Tasman Contest:

Division 1 (Single Operator – Phone):

1	2158	VK3EW	16	656	ZL1BRY
=2.	2066	VK5SR	17.	540	ZL4AR
=2.	2036	VK2AKJ	18.	534	VK3LK/QRT
3.	1869	ZL1BVK	19.	523	ZL2AWH
4.	1598	ZL1DK	20.	504	ZL1ALZ
5.	1323	VK2SWR	21	497	ZL2AUB
6.	1101	ZL1AYQ	22.	277	VK3BYY
7	1099	ZL4IM	23	268	ZL3TX
8.	1074	ZL1BYZ	24.	243	VK5EMI
9.	992	VK2QV	25	150	VK6JJ
10.	909	VK4YN	26.	79	VK5ATQ
11.	898	VK2NMO	27	18	VK5ET
12.	894	VK6BH	28.	3	VK2JCN
13.	850	ZL1WT			
14	792	VK7JGD			
15.	742	*VK3JWZ (ineligible)*			

Division 2 (Single Operator – QRP Phone)

1	534	VK3LK

Division 3 (Stationary Mobile):

1	909	VK4YN

Division 4 (Single Operator – CW):

1.	576	VK5NJ	9.	204	ZL6QH
2	528	VK3VP	10.	193	ZL1AJP
3.	455	ZL2RX	11.	176	ZL1ALZ
4.	450	VK3BBT	12	135	ZL1IH/QRP
5	359	VK3MV	13	76	ZL1WT
6.	291	ZL1BYZ	14	33	VK4YN
7	264	VK3EFO	15	12	VK5ET
8.	244	ZL2AJB			

Night-Owl (Top score, last hour)

1.	317	VK2AKJ (Certificate awarded)
2.	312	ZL1DK
3.	308	VK5SR

Wooden Spoon (Lowest scoring Log):

*3 VK2JCN (Certificate awarded)

Oceania DX Contest Committee

The Oceania DX Contest (formally known as the VK/ZL Oceania DX Contest) is about to re-emerge as the premier contest in our region The NZART and WIA Presidents appointed Brian Miller (ZL1AZE) and Martin Luther (VK5GN) to lead the formation of a joint management committee to manage and promote the Oceania DX Contest The following committee has been formed.

The core members (with voting rights) are,

Brian Miller ZL1AZE (NZART rep, Contest Manager and chair)
Martin Luther VK5GN (WIA rep)
Tony Burt VK3TZ
Wilbert Knol ZL2BSJ.

The other (non-voting) members are;
John Cashen VK4UC
Philip Miller VK2FHN
David Pilley VK2AYD
Olaf Moon VK1JDX
Geoff Clark ZL3GA

Committee decisions and discussions are communicated on the Oceania DX Contest email reflector at OceaniaDXTest@yahoogroups.com. Anyone interested in the contest is encouraged to join this reflector and take part in discussions. Some of the immediate tasks which the committee is addressing are:

Confirmation of the 2001 rules.

- Send 2001 rules to the major contest web sites and to all of the major radio magazines.
- Lobby the major contest software program developers to include the Oceania Contest
- Look for more sponsors of awards Decide what we would like to see as awards both in the short and long term. (QRP etc)
- Promote publicity by allocating areas of the world to individual committee members and encouraging them to develop publicity in those target areas. Send invites to past participants, known contest operators, DXers and other active VK/ZL/Oceania hams on HF
- Planning for an Oceania DX Contest home page
- Preparation and submission of 2001 contest budget to WIA and NZART
- Investigation and adoption of Log Checking tools (e.g., Cabrillo tools)

Watch the Oceania DX Contest reflector for further news Please email the reflector or contact one of the committee members if you have any queries, concerns or ideas regarding our contest.

Brian Miller ZL1AZE
Chair Oceania DX Contest Committee

PLAN AHEAD

JOTA Facts 2000

World wide

Total Scouts and Guides	**400848**
Total Amateurs not Scouts or guides	**8074**
Total JOTA Radio Stations	**10707**
Total JOTI locations	**1462**
Active Countries	**108.**

In Australia

Participants	**15350**
Stations	**300**
Internet	**150**
Countries contacted 25	

JOTA/JOTI 2001
October 20/21

New Contest Site

Some of you may know that John Loftus VK4EMM will shortly close his 'Radiosport' contest web site. Apparently this has been brought about by decisions on the part of the host for the site, and not of John's making. At present the site is still running (http://www.uq.net.au/radiosport/), but has not been updated for some time.

In order not to leave a gap in information about VK and ZL areas contests, it was suggested that I try to set up something. Needless to say I was a bit worried about how to tackle such a task, but after negotiations and questions, I am pleased to announce that Allan VK2CA has made available space on his VKHAM site.

I invite you all to look at the opening page at http://www.vkham.com/contests/index.html These are early days, so I am busy reading about HTML and gathering ideas how to make these pages effective for YOU, the contester or interested reader.

Please let me know of any suggestions that you may have. Also I am very pleased to say that Joihn VK4EMM has given permission for relevant material from 'Radiosport' to be used on VKHAM Thank you most sincerely, John

Look forward to your comments

Ian Godsil

New Old Federal Contest Coordinator

"Ian Godsil VK3VP has been re-appointed Federal Contest Co-ordinator. Ian held the post from 1998 until September last year. when he resigned after considerable criticism was levelled at him over various aspects of contesting in VK-land.

In the interim, Ian has studied modern contest logging programs and now uses one for most of his contest work. Also during this interim period, he has continued to supply notes for this column

Ian asks that you keep him informed of all contest-related information

He may be contacted by e-mail ianvk3vp@telstra easymail com au

His postal address is: 57 Nepean Highway, Aspendale, 3195."

Novice Notes

Peter Parker VK3YE (*)

An introduction to IRLP

The new mode that's got amateurs talking

Introduction

"Worldwide communication from your VHF/UHF handheld transceiver."

That's the promise of the Internet Radio Linking Project (IRLP), amateur radio's fastest-growing mode. There are more than one hundred IRLP-capable repeaters worldwide, and their numbers are grow daily. In Australia, amateurs in Sydney, Melbourne, Perth and Ipswich canaccess IRLP-equipped repeaters with many systems planned. Sponsors report record activity, with it being hard to get a word in edgeways during busy times.

Participation in IRLP requires only a standard two metre or seventy centimetre handheld or mobile transceiver. Amateurs of all Australian licence grades can access IRLP if there is a node in their area.

History

A key aim for many amateurs has been to communicate over long distances. For most of amateur radio's history, most long-distance communication has been on the high-frequency part of the spectrum. This began to change with the advent of amateur satellites.

However short pass times, restricted footprints and the need for specialised equipment and antennas ensured that HF, with its modest equipment and antenna demands, remains dominant for long-distance amateur communication

The growth of packet radio from the late 1980s and the rapid spread of the Internet several years later led to amateurs linking the two networks together. The use of packet 'converse bridges' linked to 'wormholes' allowed amateurs to have keyboard-to-keyboard chats via their local bulletin board. However network congestion and low data transfer speeds often made this mode no faster than slow-speed Morse.

Amateurs soon started to experiment with using the Internet for voice communication. A system called I-Phone (Internet-phone) allowed voice repeaters to be linked via the Internet. I-Phone proved an instant hit and soon spread worldwide.

It saw greatest use in Australia during a special Australia-Day link-up on January 26 this year. Links in most state capitals allowed hundreds of amateurs to communicate across Australia in a manner reminiscent to the Aussat Jamboree of the Air satellite links in the early 1990s.

I-Phone had several disadvantages, summarised as instability and lack of security. The instability was due to it being based on the Windows operating system. Links were frequently lost and control operators had to 'babysit' the link to ensure that it remained operational.

The security of I-Phone was also poor, with it being possible for non-amateurs to break into an amateur link via the Internet. Control operators again had to supervise their system to ensure that non-licensed persons were not illegally accessing amateur repeaters.

A Canadian amateur, David Cameron VE7LTD, who had been experimenting with I-Phone, developed a new Internet-based radio linking system that was without I-Phone's problems.

Basing the software on the stable Linux operating system cured the instability observed with I-Phone. Security was strengthened by using the PGP key encryption system to prevent pirate hackers breaking into radio links via the Internet. Additional features of IRLP include user-selectable links (via the DTMF keypad provided on many transceivers) and the ability for participating link stations (or nodes) to receive automatic software updates. A further benefit (from an amateur viewpoint) is that all participants must enter via a radio link. This contrasts with I-Phone, which is less radio-based as users can log in via the web.

Many involved in I-Phone have converted their repeaters to IRLP. Canada and the US were the first to switch, and the last three months have seen phenomenal growth in Australia. IRLP is now available in some UK cities, with great interest also being shown by amateurs in other parts of Europe.

IRLP in Australia

A rudimentary Internet-radio link was established in Sydney in 1992/3 (Reference two). The experiment lasted only a short time, but raised considerable interest in the possibility of combining amateur radio voice and data communication To put things in perspective, at the time many PC users had not switched to Windows, the World Wide Web was hardly born and e-mail was only known in academic, research and computer enthusiast circles.

A few years later, I-Phone was introduced to Sydney's VK2RBM repeater, operated by the Blue Mountains Amateur Radio Club I-Phone was based on Internet Telephone Package software. Amateurs could plug their headset into their sound card and work through I-Phone equipped repeaters from anywhere with an Internet connection.

As mentioned before, I-Phone's popularity in Australia peaked in January, when it was successfuliy used for a nation-wide hook-up.

Australia's first IRLP node was VK6RNC, run by Perth s Northern Corridor Radio Group. It opened in February VK2RBM switched from I-Phone to IRLP in April Melbourne's VK3RGL came third when it opened in June 2001 after a week of tests on a simplex frequency.

At the time of writing (early July 2001) six Australian repeaters were equipped with IRLP. These are listed below.

- VK2RBM Blue Mountains 147 050 MHz

- VK2RMP Wollongong 146.800 MHz
- VK3RGL Geelong 147.000 MHz
- VK4RKP Ipswich 146.725 MHz
- VK6RNC Perth North 146.625 MHz
- VK6RFM Fremantle 146.950 MHz

IRLP nodes are planned for Adelaide, Darwin, Launceston, Canberra, Bendigo, Mildura, Penrith, Plumpton, Terry Hills and Antarctica. Some may be on air by the time this article appears.

How IRLP works

(by David Cameron VE7LTD)

An IRLP node consists of a radio transceiver (to provide an RF link into the node), an IRLP interface board, and a personal computer connected to broadband Internet. IRLP can be used over a telephone line Internet connection, but performance is less impressive.

The computer uses Voice-Over-IP streaming software called Speak Freely, which operates under the Linux operating system. The software digitises and compresses audio received from the radio. At the other end of the link it decompresses the audio and converts it to analogue. This audio is then fed to the radio transceiver. The process reverses when the station at the distant node responds.

Voice-Over-IP works as follows:

- Sample the audio using an analogue to digital (A/D) converter. The A/D converter used by IRLP is the input source of a standard PC sound card. This creates a continuous mono 8-bit digital stream of raw audio at 8000Hz (64000 bps).
- Compress the audio by down-sampling the stream and using an 8-bit ULAW algorithm to halve the size of the stream (32000 bps) with little degradation of the audio.
- Split the sample into small chucks (or packets).
- Transmit the packets to the remote host using a User Datagram Protocol (UDP) stream. UDP does NOT confirm the reception of packets; it uses "fire and forget"
- Receive the packets on the remote host.
- Join the split packets back into an 8-bit ULAW stream
- Uncompress the ULAW stream back to an 8-bit raw stream of audio
- Play the raw audio stream through a digital to analogue (D/A) converter (the output device of your sound card)

The control software controls the stream using carrier operated squelch (COS) or continuous tone coded subaudible squelch signals (CTCSS) to start and stop the stream. When COS is present, the computer detects it through the IRLP interface board.

The buffer that joins the split packets back into the audio stream controls the PTT. The IRLP interface board receives a "key" signal from the computer while there are packets in the buffer, and an "unkey" command when it is empty.

The user connects to the IRLP computer using DTMF (dual tone multi frequency or 'touchtone') signals sent over the repeater. DTMF sequences are owner programmable, and can accomplish almost any function imaginable. The DTMF signals are detected on the IRLP interface board and sent directly to the computer in binary, where they are converted into numbers. A DTMF software program then runs commands on the computer depending on the code entered.

These commands are sent to various software scripts that start and stop Speak Freely, basically establishing and breaking the link.

Operating etiquette

To get the most from IRLP, operators should be unselfish and share the link with others who have equal right to use the facility. Commonsense and good repeater operating manners will generally serve the IRLP user well. However you should be aware of the following differences between IRLP and standard repeater operation.

Large groups and high activity

As with any large on-air gathering, confusion can reign if operators are unclear as to who is next in line. Clearly identify the next station when you conclude a transmission. Before calling in, listen for a few minutes to get an idea of order. Also avoid using an IRLP-linked repeater for lengthy local chats if contact can be maintained on simplex or via other unlinked repeaters.

Presence of interstate and foreign stations

Regular users of a local repeater know each other's voices and heavily rely on this to fill gaps caused by sloppy pronunciation. Also usually only a two or three letter callsign suffix needs to be remembered. The presence of interstate and overseas stations makes clear pronunciation with standard phonetics imperative on IRLP. Foreign stations sometimes have difficulty understanding our accent. Speaking slightly slower than usual will often assist here

Time delay

An unlinked voice repeater has almost no time delay. However as IRLP links make use of data processing and long-distance transmission, delays can be up to three seconds. Before talking, count to five, press your PTT, wait a second and then talk. The delay allows links to stabilise and reset

Multiple time-outs

Normal repeater usage requires operators abide by the timeout of the repeater or their transmissions are cut off. A successful IRLP contact requires operators abide by the time-outs of both repeaters and that of the IRLP link itself. If one side remains inactive after a specified duration, the link between the repeaters will drop out. To prevent this, operators should 'ping-pong' transmissions between the local and distant repeater so that each end has sufficient activity to maintain the link

Programmable links

Operating voice repeaters in Australia is a matter of selecting the correct frequency and offset and making a call. Using an IRLP-equipped repeater whose link is active requires no extra access tones or codes. On the other hand, if an IRLP link is inactive or you wish to choose which repeater you wish to link to, you will need to enter the correct DTMF code for that link. This matter is discussed in detail later in the article

Existence of a 'reflector'.

Normal IRLP links join two repeaters only. However, a 'reflector' can allow multiple repeaters to be linked via IRLP. The record for the number of repeaters linked currently stands at over 20! This

has great potential for special-interest groups (eg youth, ALARA or old timers on-air gatherings), special events such as JOTA or amateur news broadcasts.

IRLP codes & link selection

From the user's perspective, the largest difference between IRLP and conventional repeaters is the use of user-selectable links.

These use DTMF codes, as used by standard touch-tone telephones. **If you wish to operate through an open IRLP link, you do not need to send DTMF tones or have DTMF equipped on your transceiver.** Tones are only needed if you wish to open a link that has closed or reset the link to another repeater or node. Each node has a unique four-digit code that must be entered to allow linkage to it.

There are differing opinions over the extent to which people should be given the access codes required to activate links. Groups in small cities may opt to make codes available to everyone.

In densely populated areas (such as the eastern seaboard) sponsoring clubs may opt for codes to be available to designated control operators or members only. Another possibility, being discussed currently, is to release node codes, but add a prefix available to designated operators only.

The matter of codes is likely to be controversial, with many different views being expressed. However there is general consensus among Australian clubs that IRLP should be open to all, and members listening will enter the code for non-members wishing to be linked to a particular repeater.

Most modern amateur hand-held transceivers can transmit DTMF codes. Those without suitable equipment or who don't know the codes have several options. These include:

- Ask another station (especially a member of the club sponsoring the repeater) to key the code for you
- Homebrew a DTMF encoder or salvage one from telephone equipment
- Purchase a touch tone keypad (at the time of writing, Tandy was selling them very cheaply)

Before you enter a code check that the repeater is not in use. Wait a few seconds, identify yourself, announce that you are connecting to another node and send the DTMF code. If you are successful, you will hear a voice confirming the link connection.

IRLP's impact on amateur activity patterns

Almost every emerging mode in amateur radio has an effect on existing activities and modes.

In some cases the new mode supplants the old which is then seldom used or utilised mainly for nostalgic purposes. This was true for AM when HF SSB emerged dominant in the 1960s. Interest in the established activity may continue, but on a smaller scale. This is perhaps true for VHF SSB/AM tunable operation when FM net frequencies and repeaters spread across the country in the 1970s. IRLP influence on other amateur activities is not yet known.

Many of the concerns about IRLP are very similar to those expressed when repeaters became popular. These concerns include a centralisation of station capability (from many individual stations to a few repeater sites) and technical expertise (from many individuals to a tiny number of software developers and repeater maintainers). Those who value amateur radio's possible contribution to emergency preparedness should also be concerned that our HF equipment and antenna capability is maintained despite any swing away from HF towards IRLP.

On the credit side, IRLP offers many benefits for amateur activity Those who establish IRLP nodes learn about data and voice communications technology and are able to spread the benefit of their knowledge throughout the amateur service. IRLP has reignited activity amongst many lapsed licensed amateurs. It offers particular benefits to the increasing number of amateurs unable to fully enjoy international HF communication due to space and interference constraints at home. IRLP is also an excellent drawcard when promoting amateur radio to the general public. If the amateur service is to remain a technological activity, it cannot afford to be bypassed by developments such as IRLP.

IRLP requires the amateur service to manage its affairs co-operatively. The growth of repeaters in the 1970s and packet radio in the 1980s provide precedents for this. There will be some testing moments as those involved seek a workable balance between central standards and local initiative and handle potentially controversial matters such as access to control codes!

The need to involve individual amateurs worldwide in IRLP development and to lessen the division between the tiny number of innovators and the broader mass of the amateur population by raising the expertise of the latter is another challenge faced by proponents of all modern communication techniques. not just IRLP

Conclusion

There is little doubt that IRLP and allied techniques will have an influence on amateur radio activity at least as significant as the growth of FM and repeaters in the 1970s. It is hoped that radio amateurs are imaginative in their use of this technology and are able to exploit it for their collective good

Acknowledgments

The author acknowledges the assistance of IRLP developer David Cameron VE7LTD and local pioneers Peter Illmayer VK2YX and Tony Langdon VK3JED in the preparation of this article. Much of the material was presented in abridged form by VK3JED at the Moorabbin & District Radio Club on July 6, 2001.

References

1. The Official Home of the Internet Repeater Linking Project http://www.irlp.net
2. Bell & Illmayer, Radio and Communications, July 2001
   Editor's note: This will be Peter's final Novice Notes column Peter will continue to write other articles for Amateur Radio magazine. The Novice Notes Online website will be maintained under a different name A new Novice Notes columnist is required to ensure that AR magazine continues to provide for the newcomer to amateur radio Those interested should contact the Editor.

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Novice Notes Online: http://www.alphalink.com.au/~parkerp/nonline.htm

Spotlight on SWLing

Robin Harwood VK7RH

Bye bye BEEB bye bye

On the 30th of June at around 1200 UTC, the BBC World Service ceased direct short-wave broadcasts to Australasia.

At 0700 UTC on July 1st, broadcasts directed to North America also ceased Leading up to this, hundreds of listeners wrote, phoned and pleaded with the BBC World Service to reconsider and protested to British diplomatic outposts. (The Foreign and Commonwealth Office is responsible for the funding of the BBC World Service) It was also covered in the British and International media American Associated Press contacted me for a comment, which was carried over the wire services. They got my comments but misspelled my surname. Such is short-term fame!

The BBC did not budge in their resolve to drop short-wave broadcasts to the two regions. They kept emphasizing that local FM rebroadcasts were available but failed to mention this was at limited, inconvenient hours They also said that programs were available via audio streaming over the Internet

I have tried to listen often and testify that the links can be scratchy and drop out due to net congestion. They also did not mention that some programs are unavailable because they do not have the Internet Rights, especially sports commentaries Frequently an advisory loop will state this fact, although the program is freely available on radio.

Radio Netherlands International in Hilversum quickly capitalized on the vacated BBC channels to North America and launched English programming One listener even heard the BBC continuity announcer fade out, followed a few seconds later by Jonathan Marks of Radio Netherlands saying that the BBC may have gone but here is Dutch International Service

Here is the schedule of the Radio Netherlands transmissions to North America as from July 1st. Note the use of the VOA site in Delano, Calif. These are in addition to their regular Bonaire relays All programming in English.

Freq	Start	End	Site	Power	Bearing
5965	1000	1200	Sackville	250	240
9515	1200	1630	Sackville	250	268
11865	1300	1600	Delano	250	NO
15220	1400	1600	Sackville	250	285
17840	1700	1800	Sackville	250	285
6175	2200	0400	Sackville	250	268
9590	2200	2400	Sackville	250	268
9590	0000	0200	Delano	250	075
6135	0200	0400	Delano	250	NO
6175	0400	0700	Delano	250	ND

London may have ceased broadcasting directly to this region but the BBC World Service continues to be heard here but not as strongly as previously. 9410 and 12095 continue to come in from 0400 until around 0700 but 11955 from 0600 has gone as has 9580. Around my local midday I am hearing 9915 at excellent strength and 9410 is there but well down. The Thai relay sender on 17790 is there from 0001 until 0200 but has multipath propagation echoes

In our evening, 9740 from Singapore is still there but obviously the antenna has been slewed away . Also the audio has improved. It will be interesting to see what it will be like in our summer months .

If you tune to 21680 from 0100 UTC, you will hear Australia's first international broadcasting station, "Christian Voice" and if you keep monitoring the channel, you may be surprised to hear Radio Australia from Melbourne broadcast in Indonesian for 30 minutes Both transmissions emanate from the same sender on the Cox Peninsula site, near Darwin. It is confusing. The CV programs come via satellite from England.

HCJB has left the Pifo site, near Quito, to make way for a new international airport for Ecuador HCJB is now near Guayaguil, on the Pacific coastline and considerably lower in altitude. HCJB will use overseas relay sites temporarily, accelerating plans to broadcast from Kununurra in WA. This is the second international broadcast station licensed by the Commonwealth Government.

These two international licenses are different to that of the semi-official Radio Australia. The Commonwealth Government has decided to reactivate the Australian International television program, following the pullout of the Seven Network. It will be under the aegis of the ABC and will show advertising

Our nearest neighbours are unstable politically. Recent events in PNG are covered in Radio Australia's *tok pidgin* service, the region's lingua franca. This is on at 0900 on 6020 kHz. Also Vanuatu can be heard on 7260 around 0730 in English, French and the local language Bislama. Vanuatu has been rocked by recent political turmoil.

Next door, the Solomon Islands has also been beset by ethnic warfare A shaky truce is just holding. You can hear Honiara on 5020 best around 1000, just prior to sign-off.

Port Moresby can be heard on either 9675 in our late afternoon yet is stronger on 4890 in our evening. Also various district or provincial stations are in the 90 metre tropical allocation between 3.2 and 3.4 MHz These are somewhat irregular, due to funding shortfalls or frequent equipment breakdowns.

A evangelical Christian Broadcasting Network was planned for short-wave but has been placed on hold due to a financing and equiipment.

I noticed that the Australian Radio DX Club members now have the option of having their monthly bulletin sent in PDF format via email The annual fees come down if you opt for this delivery method, compared to having these bulletins printed and posted Maybe it is not too far away from this worthy journal being also despatched in a similar manner Who knows?

Is there sufficient interest in organising an online chat for those interested in short wave monitoring and listening? I am aware that several groups do exist in other regions yet I am unaware of any groups within Australia who would like to participate

I do have several clients such as IRC, Yahoo chat and MSN plus Paltalk, a voice chat program It just requires agreement to settle on a suitable program to make this a reality If you are interested e-mail me at rharwood@primus.com.au

Well that is all for this month Until next time 73 from Robin VK7RH

AN EXPANDING WORLD

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All times are in UTC.

Mid Winter Slumber

Mid Winter Tropo on 144 MHz and above

1296 MHz contacts over 800km's in the middle of winter are unusual, especially over an inland path. Such were the conditions of the 23/24th of June, 2001!

Colin VK5DK reports ...

"Here are the details of the opening on the 23rd of June to VK2 from this QTH. I first worked Mark VK2EMA at 1220 UTC on 144 MHz with signals at S7, and then at 1240 worked Daryl VK3XDQ at S4. Daryl is in Central Victoria.

Again worked VK2EMA on 144 MHz at 1320 with signals now at S9, we QSYed to 432 and contact was made with signals at S3 with QSB. We returned to 144 MHz and it was decided to try 1296 MHz, where Mark is running 120 watts I was able to hear his CW signal at S2, but at this stage, Mark could not hear my 15watts. I kept monitoring the signal on 1296 and we were able to complete a 2 way contact at 1341 UTC with Mark receiving my signals at 5 x 1 and my report was 5 x 2 to Mark, but he was peaking to S3. This is a distance of 860km over all land in winter time

Sunday morning (2200 UTC 23 June) I was able to work Reg VK2MP on 144 MHz with signals peaking to S6, but no other VK2 signals heard at this QTH." . Colin VK5DK.

Of interest, Colin was using his new Yaesu FT817 to drive his 1296 MHz transverter

Ron Cook VK3AFW reports...

On Sunday 17th June at about 3:30 PM EAST Rod, VK2TWR, rang me to report he was hearing 2 metre beacons from Mt Gambier, On Monday night, 18 June, at around 11 00 PM EAST, VK3DDU (?) in Melbourne, worked into Adelaide and North West Victoria on 2 metres. It is interesting to note that the Hepburn predictor does not suggest good conditions for these periods, yet the propagation was there. . Ron Cook VK3AFW

Steve VK2KFJ reports ..

Dave VK2JDS phoned me Sunday (24/6/01) morning to see if I could get on air, as he found plenty of repeaters accessible, but all my gear is off air. Dave has a mountain in his backyard, so he has to drive to the top (900mASL), its all cleared of trees, but we have not been up there to put some masts & antennas up for serious DXing.

We have collected various bits, i.e. masts, 6 & 2m yagi's, coax, shed, alsynite sheets to build a "portable" station, for visiting amateurs to camp & DX from the top. . Steve VK2KFJ

From my own observations..

Barry VK5KCX (PF95ik) worked VK1ZQA 23/6/01 on 144.1 MHz SSB (950km)

A number of VK5's worked into VK3 on SSB with Geelong beacon quite strong on 144.530 MHz.

23/6/01 Joe VK5UJ (PF95jf) reported hearing VK2RTM repeater on 438 475MHz from Tamworth as well as working VK2JDS/P on 2M FM from on top of a mountain about 50km north of Bathurst (+1000km).

On 144 MHz VK5UJ heard both VK1ZQA (working 5KCX) & VK2EMA (calling CQ) on 144 MHz SSB but couldn't get his transmit gear going in time! Propagation to mid NSW & VK1 seemed to drop out suddenly around 1330Z 23/6/01.

DX-pedition to the Flinders Ranges!

Barry VK3BJM went on another of his DX-peditions in June, this time to the Northern Flinders Ranges in SA. Here is an abridged version of his report due to space limitations!

"Friday 22/6. Made a couple of 2m contacts with Geoff, VK3FIQ, and Jim, VK3AEF; the most notable being with Geoff whilst I was heading into the Adelaide Hills (PF94lw) at 51-41.

Distance was 410km We had dinner in Gawler before heading further north When 10km north of Tarlee I worked Steve, VK5ZBK, at RS up to 58. We stopped 10km north of Craddock having rolled out the swags, and watched the night sky for two and a half hours We counted 28 visual meteors during that time.

Saturday 23/6 Having refueled at Hawker, we set off up the bitumen road towards Parachilna Whilst mobile I was able to hear the VK5VF 2m beacon until I was within 10km of Parachilna By this stage, it was nearly midday Just after dark, we found a flat near Wirrealpa station, and set up there (PF98ku-366m ASL) First thing I did was get dinner under way. Due to the lateness of the hour, I decided not to set up the yagi, and rely on the halo I figured, if someone came up on the 80m-liaison frequency, I could have the beam up in 20 minutes

BIG MISTAKE! It was cold, very cold, after the sun left us When, at 1210Z, Steve, VK5RU/ZBK, came up on 80m and started telling me about the contact a VK5 had had across to VK1 a bit earlier all I could do was curse softly to myself- by then it was too late and I was too cold to be fiddling with bits of metal in the dark

Shortly after, we were joined by VK5AIM, VK5AVQ, and VK5KK I stuck the beacon on air into the halo and David, VK5KK heard it initially at 52 We went to voice, and David was quite clear at 41 during his call But then the signal dropped and the propagation vanished

Nothing more was heard during the next half hour, after which we gave it

away Just prior to shutting down, I checked the Mt Gambier 2m beacon - it was there at 419 Then it also dropped.

Sunday 24/6 About 3km from Mooloolo station at PF99ha-510m ASL. At 1040Z-ish, contact was made with VK5KK on 80m, from where we QSYed to 2m. On 2m, I gave David a 55, and received a 51-2. I then worked Joe, VK5UJ, (who was running 25w) at 55 both ways-Joe got up to a 58 at times and Steve, VK5AIM, who was 56, and gave me a 31. A new Maidenhead locator for all three? (YES!! VK5KK)

I also tried raising interested stations on the Port Augusta 2m repeater (which was 56), but there was no response to my call. The beacon was fired up and left running towards Melbourne, and later towards Coffs Harbour (VK2BRG), but apart from a couple of meteor pings nothing was heard

Monday 25/6 Fifteen minutes prior to the appointed time, I chipped my way out of the swag (there had been ice on it from 1230Z) and huddled in the car. Ron was there, as was Ian, VK3AXH. During the next hour, 36 burns were heard by me, but none were of any significant length.

The best produced a "VK3AF", a "3BJM", and a few individual letters. They were often up to 56 in strength, but by 2130 they had started to become less frequent. Ron recorded similar results, though he did copy both callsigns fully...Barry, VK3BJM.

Gippstech 2001

Peter Freeman VK3KAI reports , "We had 61 registered amateurs at the event, plus 10 partners who participated in the activities organized by Pauline Corrigan (partner of VK3XBG). The talks were all very well received - a special thanks to all speakers for their efforts in preparing and delivering their contributions.

Discussion was often vigorous, both during question times and during the coffee and meal breaks Saturday evening (1830) saw approximately 45 people at the Conference Dinner - a low-key event with a spit roast. Catering was by a local firm The crowd started to thin out at about 2230

Sunday morning saw the talks continuing, with about 40 attending (I neglected to count heads on Sunday). Again, lots of lively discussion. Several amateurs displayed their microwave transverters and some had equipment or components for sale.

VK3XPD had his collection of hard-line cables, connectors and other bits for sale. VK3ZQB was selling various kits, including a new one (for me)-a frequency counter usable to 1GHz, programmed with a mode to display actual frequency of an IC202. VK3BJM displayed his 2.4GHz and 5.7GHz transverters, VK2EI his 24GHz system. Mark, VK3TLW, displayed his DSP-10 rig.

We had amateurs from VK3, VK7, VK5, VK1, VK2 and VK4. Also a VE who is working in Sydney (I think) One of the great things about the event, from my viewpoint, is the ability to catch up face-to-face with those voices at the other end of the contacts we have on VHF, UHF & microwaves.

The other important thing is the stimulation of thoughts and plans from the technical presentations and the various discussions. The organizers and the last of the participants finally made the start of the trip home at about 1530 Sunday.

For those wishing to plan ahead, GippsTech 2002 will be held on the weekend of Saturday July 6 and Sunday July 7, 2002. I look forward to seeing you all there!...73's Peter VK3KAI.

Next month I will have a full section on the Gippstech convention with photographs!

Microwave Primer Part Fifteen: Putting a portable Microwave Station together.

The series, so far, has concentrated more on the technical aspects of Microwave operation. The next two parts will look at putting it all together to make a station that can be taken portable. For something completely different we will talk about DC supplies!

Hindsight has 20:20 vision is a well-worn cliché but is appropriate. If a list was made of serious or fatal field failures then I'd put DC power related ones right up there!

In 1994 when, along with Roger VK5NY, we were both able to copy Wally VK6KZ on 10 GHz SSB over +1900km path. While both of us were initially heard, in the time it took for Roger to work Wally (over 30 minutes) my 12volt 7Ah AGM Cell terminal voltage had dropped below 12 volts and probably lower on Tx load.

When it was my turn, I could still hear Wally 51 but he could no longer hear me! For the next hour, we tried unsuccessfully

What I didn't realise until months later was that on the bench with 13 8 Volts I had 200mW's output on 10 GHz but at 11.6 Volts only about 10mW!

The problem was a single MMIC LO buffer that ran directly from the supply rail with a bias resistor that was calculated for 13.8 Volts. At 11.6 Volts the MMIC's output was about 2/3 power, the 10 GHz TX Mixer however being starved of LO drive as a multiplier stage just fell over just under the 12 volt point. Changing one resistor fixed the fault! The result was, however, that the world record wasn't extended by VK5KK, another 11km that night!

Firstly, let's look at the battery. A common power source, when portable, is the car battery. It is also potentially the worst one to use, as you will eventually need it to start your vehicle! A car battery is good for only one job, starting an engine. It can be a long walk otherwise. Small to medium 12V sealed lead acid batteries are the most popular for portable work, with sizes ranging from 7 Ah to over 80Ah.

Terminal voltages vary from 13.8 volts on float charge, 12.7 volts at no load to 10.5 volts at the 95% discharged point Any system connected to the battery has to be able to cope with this variation (as from our example above!)

Many of these batteries are erroneously referred to as "Gel" types Few manufacturers actually use a Gel electrolyte as it is expensive to implement properly and can fail prematurely with excessive vibration. Most of the common sealed batteries sold are AGM recombination types (Absorbed Glass Mat) that simply have sulphuric acid (SG 1320 g/l) soaked Glass Fibre matting between the positive and negative plates

13.6a-13.8 volt is nominal float charge voltage. Over voltage or boost, charging will quickly destroy the battery as the recombination process can only convert excess gas back into acid at a finite rate. Always regularly float charge them, say ever three months If you leave them permanently connected to float charging, SLA batteries will not last as long as the float charging process slowly

wear the battery. Always recharge the battery immediately after use. If a battery is left semi discharged for more than 48 hours its performance will be permanently affected.

What size you use will depend on what you are going to run. All SLA battery ratings are based on current supply over ten hours,. i.e. a 7 Ah will supply 700mA over 10 hours. If you were to supply 2 amps, the same battery only has a 4 Ah capacity.

Calculate the average DC load and then put a figure on the peak DC load, you will be surprised! Go back to the IF section of this primer and you will see why I have listed the current drain of popular radios as an important factor! Remember that you often do transmit nearly half the time on "beacon" mode when you are out as well as running two transceivers and a portable light. I use 2 Amps as my average load and a peak of 10 amps (running 2 metres).

Rule of thumb

I assume dusk to dawn operation and then to have only discharged the battery to 50%. Suddenly the 7Ah battery looks a bit inadequate! 2x12=24Ah so a 40 Ah Battery is used.

I believe in redundancy so I take two 40 Ah batteries out. 40 Ah batteries will also cope with the peak load, 10 amps on a 7Ah Battery will drop the terminal voltage below 11 volts on a full charged battery!

To cope with the expected 13.8–10.5 volt DC swing all equipment must run some form of voltage regulation. I use Low Voltage drop regulators on ALL microwave transverter stages. As all devices actually work on 10 Volts or less, I use the LT1084/85/86 series of regulators that work down to 0.5 volts differential.

A 78series or LM317T regulators are useless on rails above 8 Volts as they need better than 2 volts differential to regulate. Don't use Zener diode regulation or MMIC's running directly from the voltage rail!

Another way of stabilizing the DC rail in the field is to use a 24 volt battery system and regulate down to 13.8 Volts. A number of Microwaver's use this successfully by connecting two 12V batteries in series and using a series pass to 13.8 volts

This is the same regulator circuitry you would use in a conventional AC supply. You will effectively get 13.8 Volts on most DC loads right up to the point where the batteries are 95% discharged.

Switchmode regulation is more efficient however: a few design challenges exist to keep the EMI levels under control. I have experimented with various "buck boost" regulators but have found reliability to be a bit erratic in uncontrolled environments. A number of devices will provide 12.0–13.8 volts at 1A or so from a 6–24 volt rail.

Finally, DC distribution. Settle on a standard for power interconnection that is compatible with others in your area. I use Utilux polarized connectors on everything Buy a box of the male and female connectors and make up patch leads, flying leads Male to male types and spares for everything

Remove any tip ring power connectors from equipment back panels (especially IC202/FT290 a common failure) and replace with you standard male connector on a flying lead

Always fuse individual lines to equipment with the correct size fuse Remember you have a power source that can arc weld anything we are using! Carry lots of spare fuses of the correct sizes, you have no excuse as they are the cheapest part of the whole station

I have panel mounted all fuses with LED indicators so when something goes wrong you can instantly see what it is without getting a multimeter out In addition, always fuse the battery, for a 40Ah I use a 35 Amp fuse, just incase the main lead is shorted

At risk of upsetting, one or two people DON'T use alligator clip leads in the field, I still have the burn marks on one hand from one incident in the field!

Next month packaging a portable microwave station

In closing

I'll leave you with this thought..."Avenge yourself-live long enough to be a problem to your children!"

73's David VK5KK AR

How are we? Editor Colwyn VK5UE

We don't cooperate—with anyone!

First, we don't cooperate with each other. Ten radio clubs may exist in a metropolitan area, each with a limited membership. Half of these clubs may offer an introductory licensing class These same clubs will do a poor job of instruction and follow through. Why? Because they have a limited pool of talent.

How would one describe an Amateur Radio class? It will likely have poor learning facilities. An elementary school Classroom or High school cafeteria is a typical location for a licensing class. The acoustics are likely to be poor, the seats uncomfortable, and the lighting terrible

The audio visual aids will likely be poor. A home projector screen, a chalkboard, or a small TV set for the occasional video is the best one can hope for.

The instructors are uninspiring. Let us face it; a radio club consisting of 50 members is not likely to have access to a variety of inspiring and effective instructors

Personal prejudices will abound, particularly with respect to learning CW

from WORLDRADIO April 2001

Are any of the clubs in Australia like this?

HF Predictions

by Evan Jarman VK3ANI
34 Alandale Court Blackburn Vic 3130

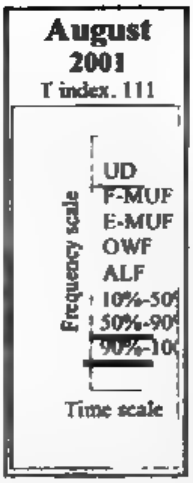
These graphs show the predicted diurnal variation of key frequencies for the nominated circuits.

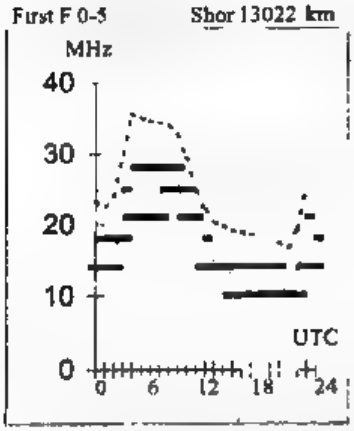
These frequencies as identified in the legend are -

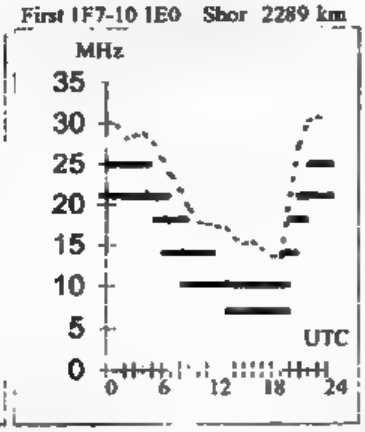
- Upper Decile (F layer)
- F-layer Maximum Usable Frequency
- E-layer Maximum Usable Frequency
- Optimum Working Frequency (F-layer)
- Absorption Limiting Frequency (D region)

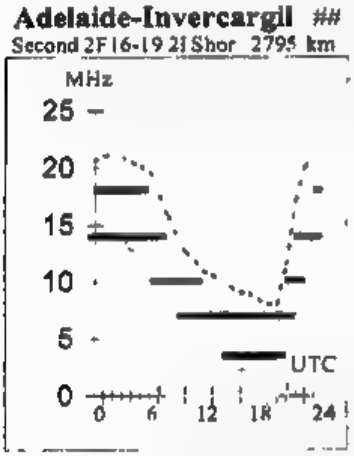
Shown hourly are the highest frequency amateur bands in ranges between these key frequencies, when usable. The path, propagation mode and Australian terminal bearing are also given for each circuit.

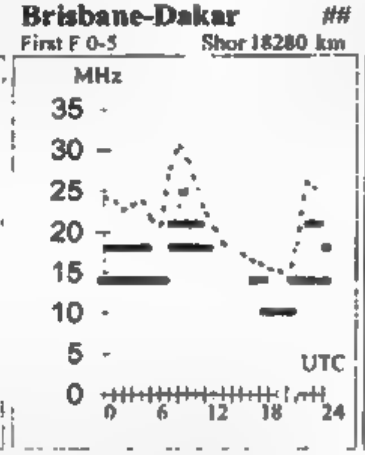
These predictions were made with the Ionospheric Prediction Service program: ASAPS Version 4

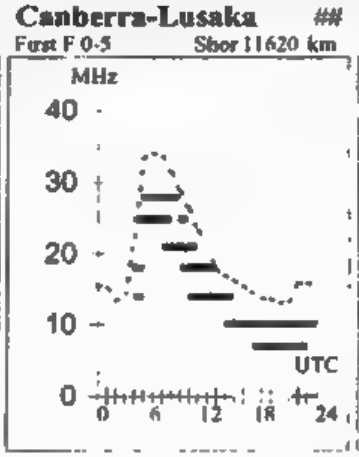


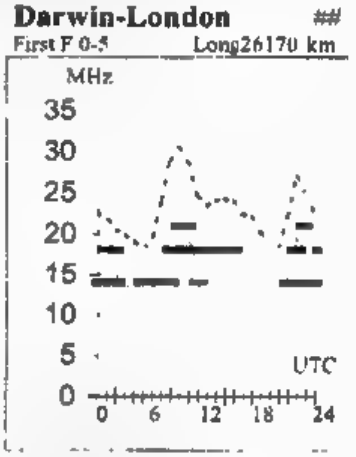


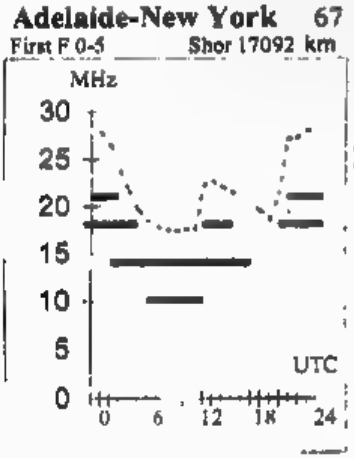


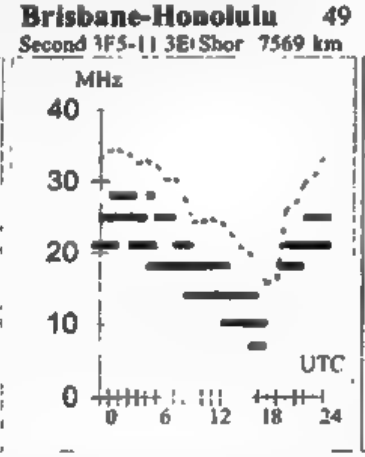


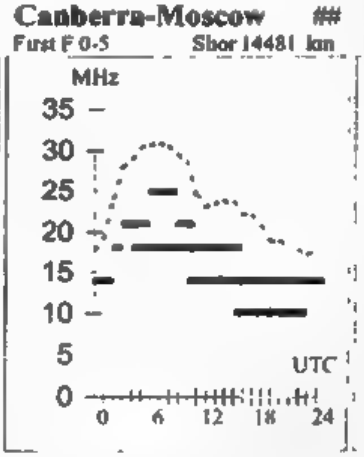


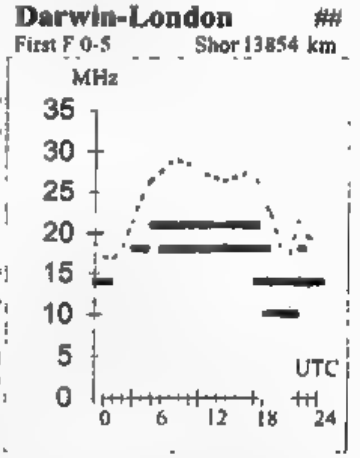


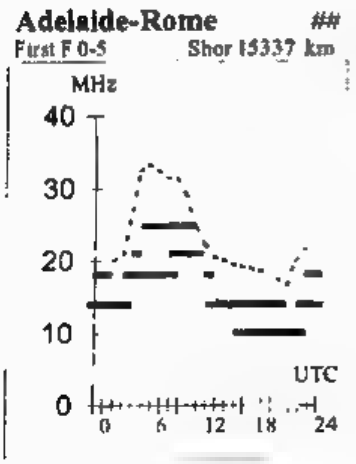


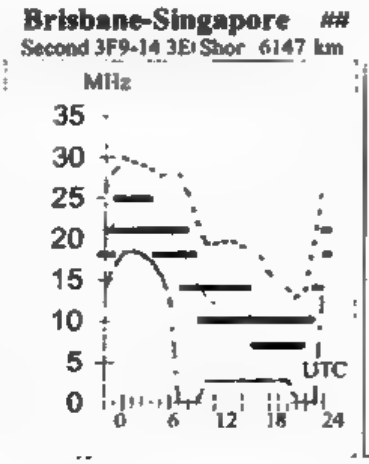


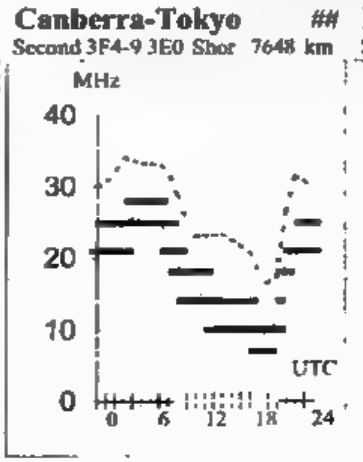


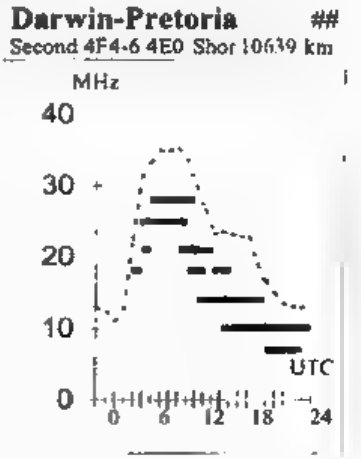












Hobart-Montevideo ##
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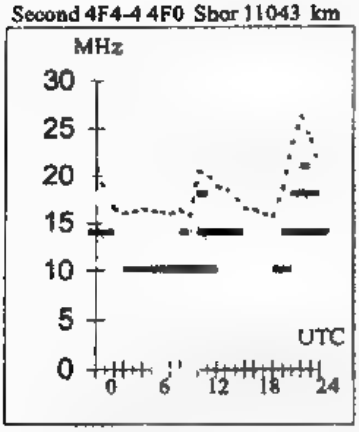

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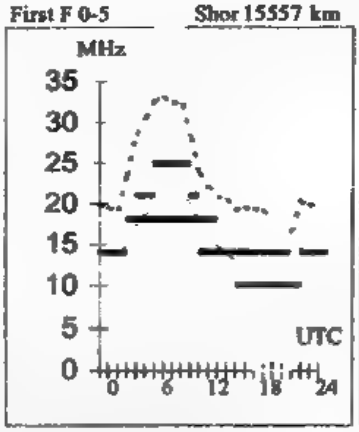

Perth-Capetown ##
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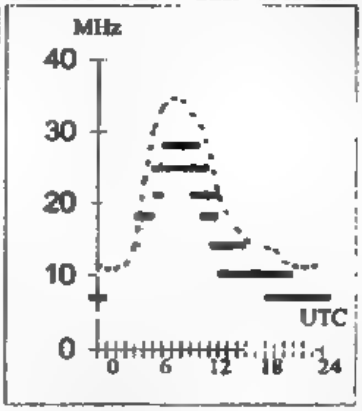
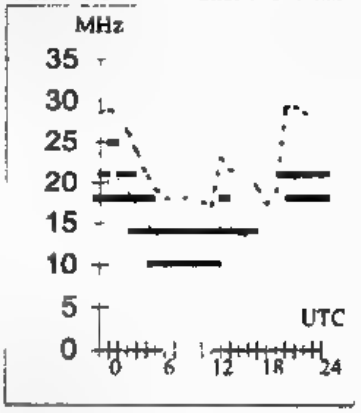


Sydney-Chicago 62
First F 0-5 Shor 14876 km



Hobart-Stockholm ##
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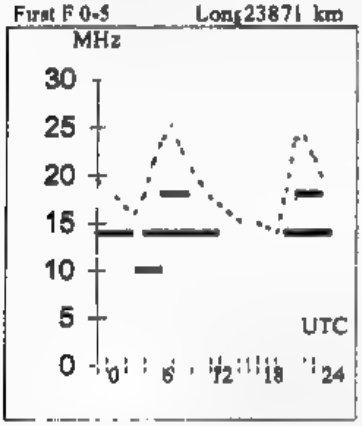

Melbourne-Jakarta ##
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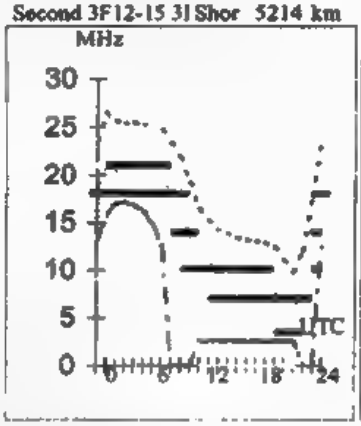

Perth-Osaka 17
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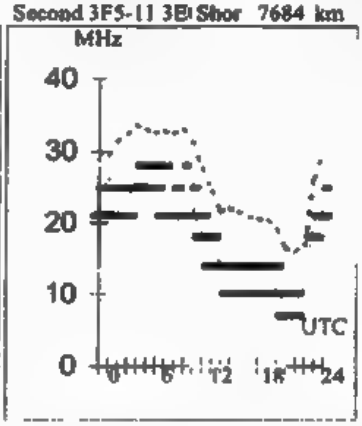

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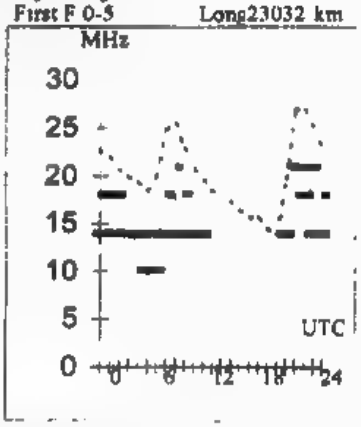

Hobart-Suva 56
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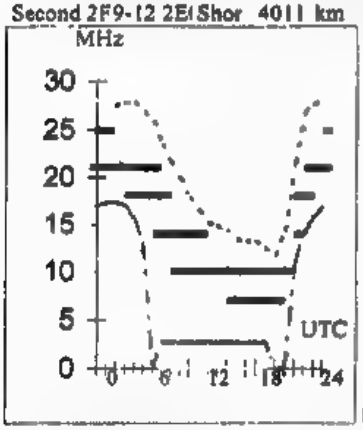

Melbourne-Manila ##
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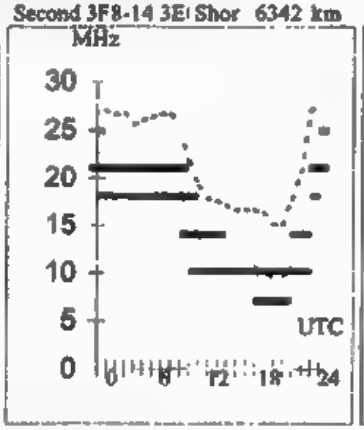

Perth-Santiago ##
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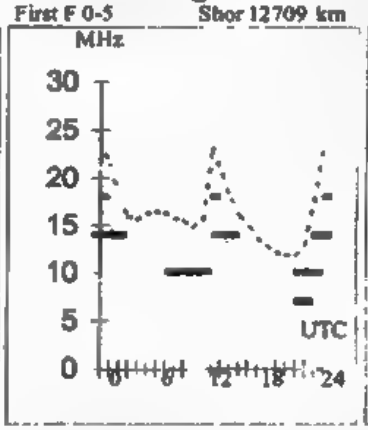

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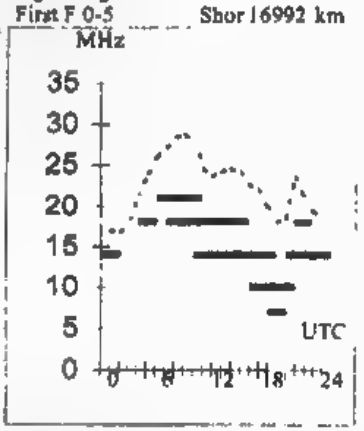

Hobart-Vancouver 49
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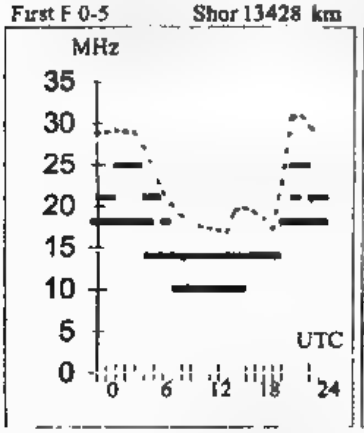

Melbourne-New Delh ##
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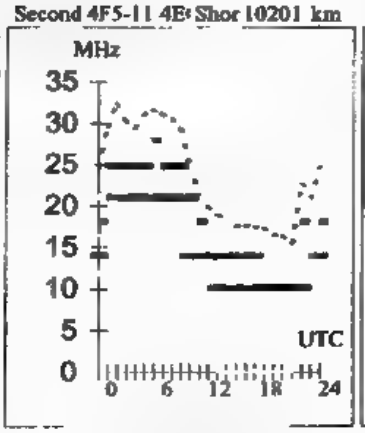

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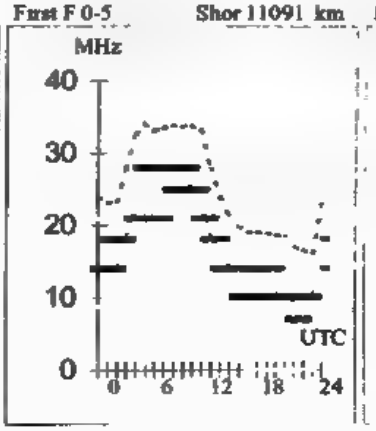

Sydney-Rio de Janeir ##
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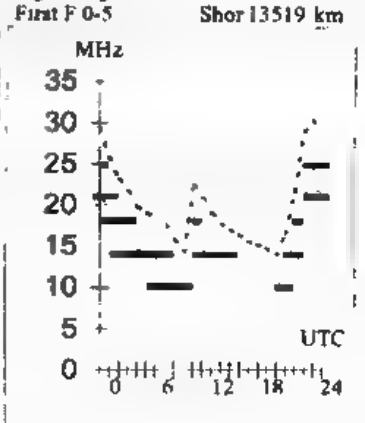

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- Hamads may be submitted by email or on the form on the reverse of your current Amateur Radio address flysheet. Please print carefully, especially where case or numerals are critical.
- Please submit separate forms for For Sale and Wanted items, and be sure to include your name, address and telephone number (including STD code) if you do not use the flysheet.
- Eight lines (forty words) per issue free to all WIA members, ninth and tenth lines for name and address. Commercial rates apply for non-members.
- Deceased estates Hamads will be published in full, even if the ad is not fully radio equipment.
- WIA policy recommends that the serial number of all equipment for sale should be included.
- QTHR means the address is correct in the current WIA Call Book.
- Ordinary Hamads from members who are deemed to be in general electronics retail and wholesale distributive trades should be certified as referring only to private articles not being re-sold for merchandising purposes.
- Commercial advertising (Trade Hamads) are pre-payable at $25.00 for four lines (twenty words), plus $2.25 per line (or part thereof), with a minimum charge of $25.00. Cheques are to be made out to WIA Hamads.
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• GELOSO tuning dial, lens and escutcheon showing 10 through 80m frequencies, bandspread. As new. $40 ono. Brian, VK2GCE, Phone 02 9545 2650 or [preferred] brianclarke@telstra.easymail.com.au

COMMAND SCR-274N Rx's, Tx's, modulators, racks, mounts, remotes, some complete setups as used in WW operations. Brian, VK2GCE, Phone 02 9545 2650 or [preferred] brianclarke@telstra.easymail.com.au

WANTED NSW

• FT200 going or otherwise or chassis. Ben VK2AJE. Phone 02 4457 3220

FOR SALE VIC

• YAESU FT102 #070941 one owner manuals $450 OBO. FV102DM Ext.VFO $220 OBO MD1 Desk mike $60 or $700 the lot. YAESU FT 757GX # 133092 G.C. manual $650 OBO. TRIO 9R-59DS Comm's rcvr $100. Kevin VK3CKL QTHR 03 9792 9503

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WANTED VIC

• POWER SUPPLY BOXES in any condition for WIRELESS SET NO 11 and any plugs/leads to suit these. Clem VK3CYD, Phone (03) 5126 2064 or clem@dcsi.net.au

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WANTED SA

• KENWOOD MODEL HS5 HEADPHONES VK5ASN QTHR, Phone 08 8725 2526

• BATTERY FOR MOTOROLA HT-220 HANDHELD. Hank, VK5JAZ, Phone 0403 285 940 or vk5jaz@hotmail.com

• INFORMATION on MARCONI transmitter and receiver output TESTSET MODEL TF1065A Circuit/Instruction Book. Mine works on every function but dev at on. Steve VK5AIM QTHR, Phone 08 8255 7397

WANTED WA

• Power transformer for YAESU YO-901 MULTISCOPE or an old unit with a good transformer in it. Also someone with a copy of HAM RADIO MAGAZINE FOR FEBRUARY 1980. VK6ABS QTHR, Phone 08 9075 4136

FOR SALE BY TENDER

CFA'S HF RADIO SYSTEM

The CFA is disposing of its surplus HF (2 -12 MHz) radio equipment. This mainly consists of a quantity of 85 solid state PCM HAWK XTAL CONTROLLED 12V DC 100W MOBILE RADIOS (no mics or other accessories available) and 4 CODAN (1kW) HF SSB BASE TRANSMITTERS comprising of Xtal controlled exciter and valve PA.

The FIXED INSTALLATION HF ANTENNA SYSTEM and remote operating equipment for the Codans is also available for sale. The Hawk radios are held in store and the Codans are installed at CFA's training college.

It will be the purchaser's responsibility to remove the equipment from site as the equipment will be sold on site as seen basis'. Limited spares are available together with handbooks and service manuals.

The Xtals must be replaced for local use, as CFA will retain the frequency licenses. HF frequency operating licences are available from the ACA. CFA wishes to dispose the surplus equipment at the earliest opportunity, ideally as a complete package. CFA reserve the right not to accept the highest bid.

Tenders can be mailed to

Nick Yoannidis
Project Manager, Communications
Department
P.O. Box 701 Mt. Waverly Vic 3149

Tenders close: 1 November 2001 Enquiries Phone 03 9262 8535 or n.yoannidis@cfa.vic.gov.au

New email address for hamads:

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If you have sent a hamad to the old email address since 22/6/01, please resend
We apologise for the inconvenience

MISCELLANEOUS

• The WIA QSL Collection (now Federal) requires QSLs. All types welcome, especially rare DX pictorial cards, special issue. Please contact the Hon Curator, Ken Matchett VK3TL, 4 Sunrise Hill Road, Montrose Vic 3765, tel. (03) 9728 5350

TRADE ADS

FOR SALE ELECTRONIC VALVES

If you are looking for valves you can contact, Gamini Liyadipitiya at email: gamini@ee.unsw.edu.au Small negotiated fee — first come first served.

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Agencies at: Active Electronics Tas, Truscotts Electronic World, Melbourne and Mildura: Tower Communications, Perth: Haven Electronics, Nowra

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Over to You

Note 1. Views expressed in letters are those of the authors and do not necessarily represent the policy of the WIA.
2. Some of the letters may be shortened to allow more letters to be published.

WIA -Reform or No Reform?

The question is a difficult one to answer. What is best for the WIA? An institution as old as the WIA certainly needs to keep pace with the times and we all know that times do change. But in my opinion, the hierarchy of the Institute is capable enough to guide us through the changing times. Our managers, the various presidents and directors are capable people, who have the best interests of the Institute at heart.

There are cries for reform from some of our colleagues but all are trying to knot the same rope in a different way so that it will fit through an ever smaller hole and the answer to the Institute's woes is not a complete rehash of the administrative set-up—The answer is an increase in revenue which will solve all problems and give our administrators the room to move and to deal with necessary Institute matters and cost increases as any healthy business does.

To achieve the necessary increase in revenue there is only one way and it has been mentioned before *compulsory membership of the WIA for every Australian licensed radio amateur*. If it appears legally impossible to implement this from say the first following renewal date of license by the ACA, then the assistance of the ACA should be sought to implement it for every new radio amateur who gets his/her licence from a set date.

Implementation can, in my opinion, only be done through amendment of the amateur radio license regulations by the ACA. In the case of a total compliance from day of renewal of license of every radio amateur the possibility of reduced membership fees could be investigated.

Ron Vette VK4AJV

RE: AM Transmision

I received the April AR and as I read through I came to the WIA quiz, I would like to draw readers attention to Question 4 "AM is prohibited by law on which amateur frequency segment?" It is not the question that bothers me but the answer.

Using AM on any of the frequency ranges would be very silly and contravene amateur band plans, but only on a section of 6 metre (in some states) is it prohibited."

I take part in many AM nets from 160 metres to 20 metres,

I use rigs ranging from IC 706 Mk2 to a home brew 807 transmitter (Plate and Screen Modulated) running 2x807s in Push Pull Class C, and the modulator runs 2x807s Zero bias class B with special triode connection. (See AR August 1948, page 5).

I have worked into VK1,2,4,5,6,7 all using AM, I even have a certificate on my wall awarded to me by the VK 6 AM group for a trans Australian contact on 80 metres, so there is still plenty of AM sets in use today.

So why not dust that old AM rig off and join the many AM nets on the bands. Two nets come to mind 160 metres 1.825 MHz 11 am local VK3 time and 80 metres 3.566 MHz 9 pm local VK3 time Friday night.

I hope to hear more AM signals

Antony Rogers VK3JIA.

Address Letters to:

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Over to You

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Contests

I enjoyed reading Bernd's (DJ7YE) comments on contests in May AR and it captures my limited experience with contests. Soon after I obtained my callsign in 1977 I eagerly anticipated participation in the annual Remembrance Day contest. I became disillusioned very quickly. Bad manners were quite prevalent, particularly amongst those who were content on getting a good score rather than just participating.

I was inexperienced at contests so adopted normal operating practice of looking for a quiet spot, putting out several "CQ Contest" calls and then waiting for responses. The number of times I had "my spot" taken over by others was most annoying and it was primarily by an aggressive local few. If I searched around and heard somebody new I would call them, exchange pleasantries and move off leaving them to their spot. In the end I gave it all away because there was no real communications taking place, only quick exchanges of numbers and a lot of discourteous operating practice. When the contest results were eventually published it brought a wry smile to my face to see those up around the winners circle. I knew how they got there and how they discouraged many others. I participated in two RD Contests and gave it away after that.

Ian Barton VK5AIB

Computers?

I am a keen reader of AR and appreciate the articles that appear in the magazine, especially the technical articles. I have only recently embraced the computer and would like to see articles about the computer itself and use of the computer. We have had some recent articles on building up a computer, using PC power supplies and PK31 for communication. Amateur radio seems to be in a bit of a decline at present with a serious reduction in the total number of radio amateurs (down a couple of thousand over last 2 or 3 years) and a drastic reduction in the number of amateurs using CW. I am a CW operator, but that is probably only due to the fact that I am amongst the older CW operators. It is mainly the 'old blokes' using it-the newcomers are never heard. I don't use SSB, but I would suggest that SSB is also well down. Maybe computers are partly to blame, but let's face it, they are here to stay. So, if it were possible to get contributions from members and others on computers, then I for one would be grateful. I don't know enough about PCs to write articles on them, but there are plenty of knowledgeable people who do. I would like to see something on using the PC for station logging, how to set up keyboard CW keying and perhaps listing interesting web sites that can be visited. Colin MacKinnon VK2DYM runs a military radio site at http://www.qsl.net/vk2dym/ . There is, or was, an excellent telegraphic instrument site at http://www.cris.com/~Gsraven/fons_images/fons_museum.html There are many sites devoted to Morse telegraphy, collecting old radios and the operation of amateur radio.

Ric Havyatt VK2PH.

We are currently running a column, Ham Shack Computers *and I am sure*

Reform

Once again we see a reluctance at the Federal AGM to reform the WIA and numerous reasons why this shouldn't happen, no guarantees of success, too expensive etc. Their solution is to improve membership communication. This is, in my view, similar to the Captain of the Titanic saying all is well while the ship sinks.

The problem is the present divisional structure does not work. The divisions have their priorities and agendas and, as a consequence, wish to advance them. I live in far north Queensland and I, and others, do not feel any degree of ownership of the WIA. Brisbane based amateurs would feel the same if the WIAQ was run from Thursday Island or Atherton or Melbourne (a similar distance).

A WIA of which we were all members would engender pride and focus on national issues. The adage "United we stand divided we fall" is indicated in the falling membership and disunity engendered by the divisional system.

The real strength in Amateur Radio are the clubs, groups, nets, experimenters etc who are out there achieving and enjoying their hobby they require help to prevent Federal Government bureaucracy from reducing our hobbies many facets by unwarranted regulation. It is these who should be interfacing with the WIA to highlight problems and concerns as well as recommendations. Hence the State based divisions should be disbanded and priorities put right.

73s

Mike Patterson VK4MIK

Amplifier information

I have recently purchased a FT 817. Its output on internal battery is 2.5 watt and on a 12 volt Gel Cell 5 watt. I find this a bit low for HF SSB.

I am looking for an amplifier to give between 25 and 60 watt output. I was wondering if there is a circuit using 2N5590 or 2N5591 or an amplifier module to work from 1.8MHz to 30 MHz. I am also looking for suggestions for an aerial and ATU.

David Downie, VK2EZD ,02 4257 2289

Post this

I wish to comment on the new postal rates that came in on 5th March 2001.

If domestic stamps are used on overseas mail GST of 10% is imposed. Thus a letter requiring $1.50 will cost $1.65 if domestic stamps are attached. However if you buy international stamps you only need buy $1.50.

Malcolm Sinclair VK2BMS

More letters on P 55

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